

The Relationship of Phrase Head Word Frequency and Acquired Idioms: A Comparative Analysis of Spanish, English and French Verb Phrase Idioms

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ABSTRACT

The term ‘phrasal vocabulary’ encompasses multi-word expressions, that is, idioms, templates or “strings of words, which appear to be processed without recourse to their lowest level of composition” (Wray, 2002, p. 4). Phrasal vocabulary constitutes an essential feature of human language production and comprehension, and plays a central role in everyday language use.

It has been debated whether formulaic idiomatic sequences are ‘holistically’ stored as long words and retrieved as wholes (Bobrow & Bell, 1973; Gibbs, 1980; Swinney & Cutler, 1979), or whether their internal semantics play an important role in their storage, access and interpretation (Cacciari, 1993; Cacciari & Glucksberg, 1991; Cacciari & Tabossi, 1993; Gibbs, Nayak, & Cutting, 1989; Glucksberg, 1991). The findings yielded by the present investigation suggest that the latter is the case since the frequency of one individual lexical constituent of verb phrase idiomatic expressions, the head-verb, was found to play an important role in whether or not an idiom was acquired and thus its subsequent retrieval. Languages for which this hypothesis was tested were Spanish, English and French.

This research, which replicates elements of the experimental design originally carried out by Kuiper et al. (2009) for the English language, and then in that by Escaip (2008) for Spanish, used a cloze procedure to test three main hypotheses: a) There are significant differences in whether or not formulaic sequences are acquired by native and non-native speakers of Spanish, English and French; b) The frequency of usage of the head-verbs contained in verb plus complement formulaic sequences is positively correlated with whether or not such sequences are acquired; and, c) Acquired phrasal vocabulary increases with the age of the speaker.

The results of this study support the predictions that the amount of formulaic language acquired by native speakers is positively correlated with age, that there is a significant effect of verb frequency on the participants' acquaintance with the formulaic sequences tested, and that non-native speakers' phrasal vocabulary is significantly less extensive than that of native speakers.

The fact that the results obtained for English and Spanish in this and previous investigations can be extended to the French language supports the argument that the head word frequency of verb phrase idioms affects in a similar way whether or not and when such type of formulaic expressions are acquired by native and non-native speakers across diverse linguistic systems (Corpas Pastor, 2003).

In addition, the links between the mastery of formulaic sequences and the frequency of such sequences as wholes, the frequency of the nouns contained in them, and time and type of learning the language were also investigated. Finally, reliability estimates for the research instruments used in this study were calculated.

INTRODUCTION

A large part of a person's vocabulary comprises multi-word expressions many of which have a unique or distinctive meaning that cannot be explained through the analysis of the different lexical items from which they are composed and their syntactic arrangement. When engaged in the production of speech, accessing this vocabulary gives people rapid access to 'chunks' of information that seem to have been 'pre-packaged' into single units, thus increasing the efficiency of verbal communication. These units constitute phrasal vocabulary or formulaic language, and represent an important feature of language production from the perspective of both the speaker and the listener (Kuiper et al., 2009; Schmitt & Carter, 2004; Wray, 2002; Wray & Perkins, 2000).

Phrasal vocabulary is ubiquitous in human languages. Formulaic expressions have been found in languages such as English, Spanish, French, Russian, Italian, German, Swedish, Polish, Arabic, Hebrew, Turkish, Greek, Dutch, Bulgarian, Croatian, and Chinese (Conklin & Schmitt, 2008; Corpas Pastor, 1995, 2003). Furthermore, research evidence has revealed the existence of remarkable similarities in the phraseological vocabularies among languages. Consequently, it can be predicted that formulaicity in English, Spanish, and other Romance (i.e., French) and Germanic languages (Corpas Pastor, 1995, 1996, 2001, 2003; Escaip, 2008) will display similar properties. Therefore, Spanish, English and French will not be treated as separate fields of study in this research, and the theoretical and empirical considerations of the language processes of acquisition, storage and comprehension presented will be presumed to apply to all three languages.

It is important for this study to clarify what is meant by the term *acquisition*. It is potentially ambiguous and can denote the process by which something is acquired as well as the outcome of such a process. In what follows it is used in many instances to refer to the outcome of such acquisition processes, i.e. what is acquired, not how it is acquired.

It should also be noted that in this study, the terms formulaic language, phrasal vocabulary, formulaic sequences, formulaic expressions, multi-word expressions, etc. will be used interchangeably since the terms are used relatively indiscriminately in the literature. However, when discussing specific studies, including the present research, the different kinds of formulaic language will be alluded to by their technical terms (e.g., idioms, phrasal verbs, collocations, etc.).

It is also relevant to mention that the structure of this work observes the requirements of the discipline in which it is submitted. Therefore, the Introduction presents the major areas of research which bear on the investigation reported in the Method and Results chapters, and on the Discussion chapter where the findings are discussed in the light of the review of the literature presented in this chapter.

In order to provide this work a comprehensive and fluid reading, the Introduction chapter was divided into six major sections: (a) Formulaic Language: An Overview; (b) Differences Between Native and Non-native Speakers in Formulaic Language Acquisition, Processing and Use; (c) Lexical Frequency and Formulaic Language; (d) Age and Formulaic Language; (e) Methodological Foundations; and, (f) Research Rationale.

These sections in turn include different sub-sections containing the key subjects and theoretical/empirical foundations of this research:

Firstly, section 1.1. deals with the place of formulaic language within theories of the nature of language that speakers know and use. Section 1.2. focuses on the role that formulaic language plays in such models and explores its detection, functions and complexity. Section 1.3. then concentrates on one kind of formulaic language, that of idioms. The reason for this is that a great deal of research on formulaic language has been conducted on idioms because idioms often have both literal and figurative readings, which makes their production and perception of interest to psycholinguists. Furthermore and most importantly, they play a central role in the experimental design of this study. Section 1.4 presents some theoretical notions on how formulaic language is acquired by native and non-native speakers of a language, and then outlines some research whose findings highlight the differences between these two groups in the degree of formulaic language acquired. This is an area to be investigated in the research reported in this work and constitutes the essence of the first research hypothesis. Section 1.5 continues this topic by presenting some research that looks at the way native and non-native speakers process and use formulaic language. Section 1.6. examines the role that lexical frequency plays in the acquisition, processing and use of formulaic language. This subject constitutes a central area of investigation in the study reported in this work since it is at the core of the second research hypothesis. Section 1.7. deals with the acquisition of language (in the sense outlined earlier) by individuals over time, and provides some theoretical grounds for the third research hypothesis of this study.

Then the Introduction chapter is concerned with methodological issues: Section 1.8. deals with lexical access and speech production theories since this subject is central to understanding how respondents in the research reported later are able (or not) to complete cloze tests. Section 1.9. then focuses on lexical access of idioms as a

necessary introduction to section 1.10 which examines cloze testing, the research methodology selected to test whether or not an idiom has been accessed from the phrasal lexicon of the participant. Section 1.11 reviews the role that corpus analysis has played in the research of phrasal vocabulary, specifically with a view to understanding the use that was made of data taken from corpora in the experimental design of this study.

Finally, section 1.12 provides a rationale for the research undertaken in this study in terms of its nearest predecessors.

FORMULAIC LANGUAGE: AN OVERVIEW

1.1. In Search of a Language Model

1.1.1. The creative nature of language

It is undeniable that human language is the result of intricate processes that operate in the human's mind. Jackendoff (1994) claims that the ability to speak and understand language requires the capacity to store in the mental lexicon not only words, but also patterns of words. These patterns represent the rules of language that constitute the 'mental grammar', which allows us to make sentences from single words. The child acquires this system of rules when learning how to speak, but this grammar is not available to the consciousness of the speaker, and only its output is (Jackendoff, 2007). The mental grammar is constituted not only by an 'Innate Part' or 'Universal Grammar', but also by a 'Learned Part'. Consequently, language ability is the result of a combination of genetic and environmental factors, where the learner is the active agent of learning, and education (among a number of other influential factors of the environment) serves as a commitment and resourcefulness magnifier (Jackendoff, 1994).

Chomsky (1965) emphasizes the creative nature of language which enables humans to formulate brand new sentences never heard or spoken before. He proposes a single processing system that is the product of inherent mind/brain structures and bestows on people a great analytical capability for the understanding, acquisition and generation of language. The genetic hypothesis proposes that "the ability to learn language is rooted in our biology, a genetic characteristic of the human species, just

like an opposable thumb and a pelvis adapted for upright stance” (Jackendoff, 1994, p. 30).

Linguists have proposed over time that this system of rules allows people to construct countless novel sentences from a limited grammar (Van Lancker-Sidtis & Rallon, 2004). In line with this, Pinker (1995) argues that “virtually every sentence that a person utters or understands is a brand-new combination of words, appearing for the first time in the history of the universe” (p. 22). Thus, from this point of view, human language is characterized by its novelty, and this essential property provides people with the resources for expressing their thoughts in an indefinite variety of circumstances (Chomsky, 1965). The creative power of the rules of grammar and its capacity for the generation of innumerable sentences in any natural language, have been disputed by few linguistics. It is widely agreed that generative grammar is part of what a competent speaker needs to know (Pawley & Syder, 1983).

However, even though it is irrefutable that humans possess this great cognitive capacity for processing language, a number of researchers have proposed that a great deal of language comprehension and production is not only accomplished analytically. Pawley and Syder (1983) claim that only a small set of the grammatical sentences a speaker is able to produce “are nativelike in form – in the sense of being readily acceptable to native informants as ordinary, natural forms of expression, in contrast to expressions that are grammatical but are judged to be ‘unidiomatic’, ‘odd’ or ‘foreignisms’ ” (p. 193). They affirm that a large part of the mental lexicon of a mature English speaker consists of several hundred thousand complex lexical items, i.e., memorized whole clauses and sentences, whose production in speech confer nativelike fluency on native speakers.

Thus, this inherent analytical faculty for processing language that enables humans to comprehend and produce utterances that they have never come upon before, has possibly been overestimated, whereas humans' great memory capacity and their ability to produce language using 'prefabricated units from memory' have possibly been undervalued (Lamb, 1998). It has been argued that humans also manage to create and understand language using prefabricated chunks of speech that are stored in the mental lexicon of the speakers as lexical items and are retrievable rapidly (Jackendoff, 1995; Kuiper et al., 2009; Lamb, 1998; Pawley & Syder, 1983; Sinclair, 1987, 1991; Sprenger, Levelt, & Kempen, 2006; Van Lancker-Sidtis & Rallon, 2004; Wray, 2002; Wray & Perkins, 2000).

Even though the Chomskian tradition has prevailed in the formulation of many models of language acquisition and some researchers have regarded the importance of prefabricated expressions as peripheral to the processes of language (Krashen & Scarcella, 1978), considerable psycholinguistic research has shown that prefabricated expressions play a definite role in language learning, production and perception. Thus, formulaicity has been recognized as an important attribute of language in modern linguistics and psycholinguistics, and numerous investigations on the role of formulaic language in the mechanisms of language have been carried out in the last few decades. Some of the relevant models of language that account for this essential feature of language are presented below.

1.1.2. The open choice principle versus the idiom principle

Sinclair (1987, 1991) explores the means by which people handle linguistic material, and proposes the existence of two models of language comprehension: the *open choice principle* versus the *idiom principle*. The open choice principle entails

that understanding language is the result of a large range of choices only limited by grammar, whereas the idiom principle offers the language users sets of linguistic choices, i.e., “a large number of semi-preconstructed phrases that constitute single choices, even though they appear to be analyzable into sections” (Sinclair, 1987, p. 320). Thus, the open choice principle operates through the selection of single words, while the idiom principle leads to the selection of blocks made up of two or more words that have previously occurred together in a regular way (Sinclair, 1991).

An essential attribute of the idiom principle is that it reflects the natural human tendency to economy of effort (Sinclair, 1987). The use of lexical phrases provides the speaker with fluency since the speed for processing them as whole units (as if they were single lexical items) increases the efficiency and reduces the time of retrieval of language items from memory (Nattinger & DeCarrico, 1992). Basically, the use of formulaic sequences eases the mind’s processing load as these multi-word expressions are processed more easily and faster than the same series of words generated under the novel language scheme (Kuiper et al., 2009).

Corpas Pastor (1996) emphasizes the importance of formulaic sequences within the lexical component of languages and the linguistic production of native speakers, because this efficiency provides the latter with sufficient time for planning longer units of speech and overseeing the social aspects of communication.

An interesting question is that of Wray’s (2002) about what could be the processing advantage of storing holistically some long formulaic sequences, when the same message they convey could be expressed in a couple of words. She speculates that long expressions are used to buy time for thinking, and also to facilitate an even rhythm in the conversation. Thus, economy of effort is not “simply about taking short cuts [but also] regulating production” (p. 75).

Sinclair (1987) highlights the incompatibility of these two models, the open choice principle and the idiom principle, and refers to them as ‘diametrically opposed’. He claims that the importance of the principle of idiom has been largely neglected, but that it is precisely this principle which fundamentally explains the processes involved in the acquisition, comprehension and generation of language. In his view, the idiom principle dominates, while the open choice principle is a secondary model.

1.1.3. A dual model of language ability

Phrasal vocabulary is ubiquitous and it is hard to have an approximate estimation of the extent of the formulaic language stored in the mental lexicon (Kuiper et al., 2009). Pawley & Syder (1983) claim that phrasal vocabulary prevails in the speakers’ output, while novel sentences constitute just the minority. Jackendoff (1995) suggests that the number of fixed expressions stored in the mental lexicon is vast. Some estimates suggest that it is likely to be ten times as large as the single word lexicon: “In the lexicon, phrasemes are more numerous than words by a ratio of at least 10 to 1” (Mel’Cuk, 1995, p. 169). Many linguistics scholars agree that prefabricated phrases amount to tens of thousands (Van Lancker-Sidtis & Rallon, 2004). Thus, the available evidence on the prevalence of prefabricated strings of words in language users makes obvious the implausibility of describing and explaining the processes of language acquisition, production and comprehension, by a single-system model (Wray, 2002).

Furthermore, available evidence of neurological studies establishes the interplay of automatic and novel processes involved in many types of human behaviour (Van Lancker-Sidtis & Rallon, 2004). There is evidence from

psycholinguistics studies on the language of normal and brain-damaged individuals that reveals that novel sentences and formulaic sequences are processed by different neurological structures, and represented in different cerebral hemispheres (Van Lancker-Sidtis, 2003; Van Lancker-Sidtis & Rallon, 2004). Analytic and synthetic linguistic skills seem to reside in the left hemisphere, while phrasal vocabulary and single word lexicon with similar properties of use are processed in the right hemisphere of the human brain (Kuiper, 2006).

Van Lancker & Rallon (2004) compared the incidence of formulaic expressions versus novel expressions in the text of the screenplay *Some Like It Hot*. They found that formulaic expressions, categorised either as speech formula, idiom or proverb, made up nearly a quarter of the sentences in the text. Then, in a verification survey to obtain an indication of the proportion of persons agreeing with their identification of fixed expressions, the participants performed significantly higher on formulaic expressions than on novel phrases, which reflected the general knowledge of the former. Their findings suggested that there is a prevalence of formulaic expressions in everyday speech of adult speakers, and supported the existence of a dual model of language ability that entails both holistic and analytical processes, i.e., a model that alternates ‘fixity’ and ‘creativity’ when processing language (Tannen, 1989).

This dual model of language ability is characterized by the interplay of the holistic process that allows humans to cope with language by accessing a vast number of prefabricated sentences, and the analytical process by which speakers handle language using their syntactic skills (Van Lancker-Sidtis & Rallon, 2004).

1.1.4. An integrated model of language

Wray and Perkins' (2000) integrated model of language involves the two strategies for processing language mentioned above: analytic processing to produce and decode novel language that implies the interaction of single lexical items with the rules of grammar, and holistic processing that depends on pre-assembled strings of words stored in the mental lexicon, i.e., formulaic sequences. Their model assigns the central role in communicative language processing to the holistic system, but it does not deny at any time the importance of the analytical or creative system. The establishment of a suitable balance between the two is proposed as 'the best deal', since seeing either of those two ways of dealing with language as exclusive would be restrictive. Thus, the analytical or creative scheme enables language users to generate or decode the unforeseen, whereas the holistic system provides speakers processing effort economy by making ready-made utterances available to them in contexts which are predictable (Wray, 2002).

According to Wray and Perkins (2000), the selection of a particular strategy for processing language in adult speakers will be determined by the priorities of social interaction and the limitations of the language user's memory capacity. The holistic strategy will represent the first choice as a result of the natural tendency of humans to economize effort, or due to the time constraints during the conversation (Sinclair, 1987). It also constitutes the best alternative when the speaker requires concentrating on a particular subject that is different from the conversation's matter. Kuiper (1996) declares that trading off processing effort against creativity has many advantages in a range of situations. "Formulae make the business of speaking (and that of hearing) easier [...] When a speaker uses a formula he or she needs only to retrieve it from the [internal] dictionary instead of building it up from its constituent parts. In other

words, such expressions likely exist as whole or part utterances within the speaker's dictionary and need not be built up from scratch on every new occasion" (p. 3).

Therefore, formulaic structures are primarily selected for language output, but the analytical system is always available to assist language users to solve any production and/or comprehension language problems that arise from the unexpected. An integrated model of language explains the "moment-by-moment strategy choices of the individual" by successfully decoding novel input, processing language efficiently, and ensuring the understanding of the message (Wray & Perkins, 2000, p. 18).

1.2. Formulaic Language

*"If a speaker could communicate only by applying grammatical rules,
he would no doubt be a man of far fewer words."*

(Wong-Fillmore, 1976, p. 297)

1.2.1. What is formulaic language?

It is general consensus now that vocabulary is not only comprised of individual words, but much of it involves multi-word expressions or sequences of words that function as lexical units (Schmitt, 2000). A large proportion of human productive output appears to be 'prefabricated' rather than novel, i.e., newly created online through a process of single word selection and grammatical sequencing (Schmitt, 2004; Siyanova-Chanturia & Martinez, 2014). Wray (2002) asserts that it is clear that a large part of human language production and comprehension in everyday communication comprises "idioms, templates, multi-word items, or strings of words,

which appear to be processed without recourse to their lowest level of composition” (Wray, 2002, p. 4). These sequences, or strings of words, constitute what is known as phrasal vocabulary or, in more general terms, formulaic language (Corpas Pastor, 1996, 2003; Kuiper, 1996, 2006; Kuiper et al., 2009; Nattinger & DeCarrico, 1992; Ruiz Gurillo, 2001; Schmitt & Carter, 2004; Van Lancker-Sidtis & Rallon, 2004; Wray, 2002; Wray & Perkins, 2000).

However, there is not unanimous agreement among researchers on what exactly comprises formulaic language, and consequently there is not a single satisfactory definition for this phenomenon. Wray (2000a) claims that “a full appreciation of what formulaic language is requires us to recognize that we are not dealing with a single phenomenon, but rather with a set of more and less closely related ones, across different data types, including the output of first language learners, second language learners, adult natives and the linguistically disabled” (Wray, 2000a, p. 464). Furthermore, formulaic expressions seem to exist in so many forms that it is not easy to develop a comprehensive definition of formulaic language. However, formulaicity may be defined in general terms as a phenomenon “manifested in strings of linguistic items where the relation of each item to the rest is relatively fixed, and where the substitutability of one item by another of the same category is relatively constrained” (Wray & Perkins, 2000, p. 1).

Formulaic expressions have been described in a number of ways. They have been defined as “multi-lexemic expressions which are perceived, memorised and retrieved as single units and are thus processed as indivisible wholes” (Munat, 2002, p. 145), or as (semi-)fixed word combinations that occur together more often than random chance suggests (Siyanova-Chanturia & Martinez, 2014). Yet, a widely accepted definition of a formulaic sequence is that of Alison Wray who describes it as

“a sequence, continuous or discontinuous of words or other elements which is, or appears to be, prefabricated: that is, stored and retrieved whole from memory at the time of use, rather than being subject to generation or analysis by the language grammar” (Wray, 2002, p. 9).

Even though highly influential, Wray’s (2002) definition of formulaic sequences has been subject to critical examination (Read & Nation, 2004; Siyanova-Chanturia & Martinez, 2014). If all formulaic expressions are stored and retrieved as wholes, i.e., as frozen blocks of words, this means that they are not amenable to changes such as substitution or transformation. However, evidence from psycholinguistic research shows that there is considerable variation among multi-word expressions.¹ Pawley and Syder (1983) concluded that “the number of memorized complete clauses and sentences known to the mature English speaker is probably many thousands. Much more numerous still, however, is a class of phraseological expressions each of which is something less than a completely specified clause” (Pawley & Syder, 1983, p. 205). Therefore, given the large variability of formulaic sequences, which will be discussed in more depth throughout this work, storage and retrieval of these multi-word expressions may vary for the same sequence from one speaker to another, or even from one time to another for the same speaker for a variety of reasons such as changes in proficiency, processing demands and communicative goals (Read & Nation, 2004).

On the other hand, Siyanova-Chanturia and Martinez (2014) argue that both the statements on the prefabricated nature of these expressions and on their holistic

¹ Some examples of the variants of the idiom *pull someone’s leg* in Grant’s (2003) PhD thesis, cited in Read and Nation (2004), are: “*pull my blue leg, somebody’s leg was being pulled, having his leg pulled, leg pulling, a leg pull, a leg puller, tugged my leg, yank somebody’s leg, leg tugged/yanked*” (Read & Nation, 2004, p. 25).

retrieval from memory do not have strong empirical support, and emphasize the pedagogical implications of this situation.

Despite its limitations, Wray's (2002) definition includes two principles that are central to the study of formulaic expressions: their multi-word character and holistic nature (Schmitt & Carter, 2004), and provides a clear start point on the journey for the identification of formulaic language. However, as pointed out in a previous section of this study, terming the nature of formulaic expressions 'holistic', and particularly their retrieval from memory requires some care, since having their own conceptual representation (Cutting & Bock, 1997; Sprenger et al., 2006) does not necessarily mean that they are stored holistically in the mental lexicon (Siyanova-Chanturia & Martinez, 2014).

1.2.2. Detecting formulaic language

Formulaic sequences are often difficult to discern. Whereas some of them are evident, such as the idiom *raining cats and dogs*, others such as *take place*, meaning 'happen', are not (Martinez & Schmitt, 2012). Therefore, in order to get a more comprehensive understanding of formulaic language, researchers have explored some of the main features of this phenomenon, among which are compositionality and fixedness of formulaic expressions.

Wray (2002) suggests that one way to identify formulaic expressions is the examination of their internal composition. She claims that once an expression has become formulaic, it detaches itself from the rules of syntax and lexicon, and is no longer 'grammatically regular or semantically logical' (Wray, 2002, p. 33)². Thus, one of the areas of idiosyncrasy common to many formulaic expressions is their

² In this respect, it seems important to mention that Wray's (2002) claim about the grammatical detachment of formulaic expressions may be an overstatement. Such detachment is never total since most items of phrasal vocabulary are syntactically well-formed.

noncompositionality, that is, their whole meaning cannot be deduced from the meaning of each of their separate lexical constituents. This noncompositionality, or opacity, which originates for several reasons through the evolution of the language practices in a particular community, is considered as one of the main characteristics of [many] formulaic sequences (Corpas Pastor, 1996; Ruiz Gurillo, 2001; Wray, 2002).

Opaque formulaic expressions may be difficult for a listener to understand, if not impossible, when heard for the first time without previous pragmatic or contextual knowledge (Wray, 2002; Wray & Perkins, 2000). Ruiz Gurillo (2001) states that literal translation of opaque formulaic sequences is virtually impossible. This opacity prevents second language speakers from analyzing them and, consequently, comprehending them. She says that the understanding of an opaque formulaic expression is “like a buried treasure in a desert island” (Ruiz Gurillo, 2001, p. 21). There are no easy access roads to it.

It has also been suggested that some phrases that are originally constructed using the rules of grammar, can develop into formulaic sequences as a consequence of their frequent use in the speech (Corpas Pastor, 1996; Peters, 1983; Ruiz Gurillo, 2001). Thus, in spite of their compositionality, or transparency, they are not anymore a product of analytical processes since they have become preconstructed lexical chunks that are accessible to the speaker, and the listener, through the holistic processes of language (Graney, 2000; Schmitt & Carter, 2004; Wray, 2002; Wray & Perkins, 2000).

Therefore, it has been proposed that when describing formulaic expressions, it may be helpful to conceptualize them on a continuum based on their degree of their opacity / transparency, “from fully bound to fully free” (Wray, 2002, p. 34). However, this distinction does not represent a straightforward decision. Recent psycholinguistic

research has provided evidence on the important role that the literal meanings of the individual lexical constituents of most multi-word expressions play in their comprehension, even if these expressions are regarded as noncompositional. More about the role that the literal meanings of the words comprised in formulaic expressions, particularly idioms, play in their comprehension will be discussed in section 1.5 of this work.

On the other hand, some researchers suggest that fixedness is an essential characteristic of formulaic sequences since the notion of their holistic character establishes that at least some of their constituents are fixed, so these expressions are stored and accessed as wholes instead of being generated online everytime they are used (Schmitt, 2005). Ruiz Gurillo (1995, 1998) proposes that the process of '*fraseologización*'³ through which a formulaic sequence is generated, is determined by a certain degree of fixedness, and, on many occasions, by a partial or total noncompositionality.

However, it is clear that only a small group of these expressions is totally fixed, and the rest of them contain slots that allow the legitimate insertion of a variety of compulsory and optional elements (Schmitt, 2005; Wray, 2002). These slots or gaps can take different 'fillers' according to what it is to be expressed, and this flexibility allows for the use of a single multi-word unit in a variety of speech realizations (Schmitt, 2000).

In addition, many multi-word expressions allow for a remarkable amount of flexibility (Schmitt, 2005), and speakers creatively modify formulaic sequences all the time, but the high level of institutionalisation of these expressions enables the language users to still recognize them (Corpas Pastor, 1996). According to Corpas

³ This Spanish term could be translated into English as 'phraseologisation', and is used to refer to the processes involved in the generation of a phrase which is considered as a formulaic sentence.

Pastor (1996), the degree of modification of formulaic expressions is positively correlated to their degree of fixedness. Thus, the more institutionalised or well known a sequence is in a fixed modality in a speech community, the more possible it is to modify it without changing its original meaning. Schmitt (2005, p. 19) cites some examples offered by Moon (1997, p. 53):

not touch someone/something with a bargepole	(British vs.
not touch someone/something with a ten foot pole	American English)
burn your boats	(varying a lexical component)
burn your bridges	
cost an arm and a leg	(verb variation)
pay an arm and a leg	
spend an arm and a leg	
charge an arm and a leg	
every cloud has a silver lining	(truncation)
silver lining	
break the ice	(transformation)
ice-breaker	
ice-breaking	

Schmitt (2005) carried out some corpus analyses to explore the variation of some types of formulaic language (idioms, variable expressions⁴, and lexical bundles⁵), and found that formulaic sequences often vary in tense and in the lexical selection of one or more elements. Schmitt's (2005) findings reveal that idioms (e.g., *scrape the bottom of the barrel*), commonly assumed to be fixed expressions, show significant variability, whereas variable expressions (e.g., ____ *think nothing of* ____)

⁴ A variable expression is a phrase that has some fixed elements and some semantically-constrained slots (Sinclair, 2004, in Schmitt, 2005).

⁵ Lexical bundles are extended collocations (Schmitt, 2005).

and lexical bundles (e.g., *have a look at*) do not show a great amount of variation and appear to be more stable. According to Schmitt (2005), this difference in degrees and kinds of variation of formulaic sequences suggests differences in their storage and processing.

While variable expressions and lexical bundles seem to be stored in the mind in a more holistic way, i.e., as wholes, idioms may have only their ‘canonical’⁶ form stored as a template, allowing for a number of grammatical and lexical variations at the time of use, without losing their idiomatic meaning.

In sum, characterizing formulaic sequences as typically fixed is not a viable option since variation is ubiquitous and affects a large number of multi-word expressions in different ways. Schmitt (2005) writes: ‘the more I work with formulaic language, the more variation I find’ (Schmitt, 2005, p. 20). Schmitt and Carter (2004) claim that flexible formulaic expressions are widely used in language because they can be adapted to a variety of situations, and suggest that there may well be more flexible formulaic sequences than totally fixed ones.

Fixedness and noncompositionality are generally regarded as the two most common accepted criteria for the identification of formulaic sequences (Read & Nation, 2004; Ruiz Gurillo, 1998). However, “the fact that these criteria turn out to be continua contributes to the difficulty in drawing the line between formulaic and non-formulaic expressions” (Read & Nation, 2004, p. 33).

⁶ “The canonical form is the most standard form, and thus the one someone is most likely to know. With idioms, the canonical form is likely to be the full idiom, rather than a truncated variant” (Schmitt, 2005, p. 36).

1.2.3. Functions of formulaic language

Formulaic language fulfils a variety of meanings and functions. Formulaic expressions are used for a wide variety of purposes since they can perform most communicative functions required by the members of a speech community (Schmitt & Carter, 2004). It has been proposed that there is typically conventionalised formulaic language available to fulfil every recurrent communicative need in all fields, including not only informal and everyday speech, but academic and scientific discourse as well (Biber, Conrad, & Cortes, 2004; Martinez & Schmitt, 2012; Nattinger & DeCarrico, 1992).

Formulaic expressions are normally related to functional language (Schmitt, 2000). They are resources available to language users who employ them depending on a number of factors such as maturation, language comprehension and social interaction needs (Wray, 2000b, 2002; Wray & Perkins, 2000).

Formulaicity not only renders the language production process efficient, but also provides socially appropriate frames for communicating, since countless formulaic sequences are closely related to particular language functions in social interaction (Schmitt & Carter, 2004; Wray, 2002; Wray & Perkins, 2000). Wray (2002, p. 89) points out that although these functions can also be achieved using novel language, the association between formulaic sequences and language functions in social interaction is evident in the following ways:

- Changing one's physical and perceptual environment to satisfy physical, emotional and cognitive needs using: commands (*Keep off the grass*); requests (*Could you repeat that please?*); politeness markers (*I wonder if you mind...*); and, bargaining (*I'll give you _____ for it*).

- Asserting separate identity to be taken seriously employing: story telling (*You're never going to believe this, but...*); and, turn claimers and holders (*Yes, but the thing is...*). Also to be separated from the crowd using personal turns of phrase (*I wanna tell you a story*).
- Asserting group identity to acquire overall membership utilizing: 'In' phrases (*Praise the Lord!*); group chants (*We are the champions*); institutionalised forms of words (*Happy birthday; clearly beloved, we are gathered here today...*); and, ritual (*Our Father, which art in Heaven...*). And to achieve as well a place in hierarchy (affirming and adjusting) using: threats (*I wouldn't do that if I were you*); quotation (*"I wouldn't want to belong to any club that would have me as a member"* (Groucho Marx)); forms of address (*Your Highness*); and, hedges (*Well I'm not sure*).

Wray and Perkins (2000) propose within their evolutionary account of language evolution that the fact these functions also feature in the 'holistic noise-gesture communication of primates', points to a parallelism that may indicate that human language evolved from a holistic protolanguage where utterances produced in the absence of a system of rules were associated with particular meanings.

On the other hand, Schmitt and colleagues (2005; Schmitt & Carter, 2004) describe a number of functions that formulaic language performs in language use:

- a) Functional use. Formulaic expressions are used in recurring social situations that require particular responses from speakers such as apologising, making requests, giving directions, and complaining. Expressions such as *I'm (very) sorry to hear about _____* expressing sympathy, or *I'd be happy to*

_____, to comply with a request, are a reliable and fast way of achieving the corresponding speech act because the members of a speech community are familiar with these expressions.

- b) Social interaction. Formulaic language is frequently used in discourse where the purpose is not mainly to convey any information or request anything in particular, but rather to engage in light conversation for pleasure and/or to show social solidarity. Formulaic expressions may then be used to keep the conversation flowing (*Nice weather today; Cold isn't it*), to agree with someone (*Oh, I see what you mean; OK, I've got it*) or to provide feedback to another speaker (*Did you really?; How interesting*). Therefore, formulaic language constitutes a key element of informal spoken speech, and one of its functions is maintaining social interaction.
- c) Discourse organisation. Formulaic expressions are commonly used as organising markers in both written and spoken discourse (*In other words; In conclusion; On the other hand; As I was saying*).
- d) Precise information transfer. Different study and work fields possess technical formulaic language that is commonly used to convey information in a very precise way, minimising the possibility of critical misunderstandings. “For example, in aviation language, the phrase *Taxi into position and hold* clearly indicates and concisely conveys the instructions to move onto the runway and prepare for departure, but to wait for final clearance for takeoff” (Schmitt, 2005, pp. 15-16).

Schmitt (2005) offers many reasons for the study of the nature of formulaic language and of its importance and functions in language use:

1. Formulaic expressions are everywhere in language use.
2. Proficient speakers know a large number of formulaic sequences.
3. Formulaic language is a rather varied phenomenon, and undertakes a variety of communicative functions.
4. The use of formulaic expressions improves fluency.

Moreover, another important reason for the study of formulaic language that impacts significantly the field of language teaching is that it has been observed that the use of formulaic language improves the general impression of second language speakers' speech production. Non-native speakers that use formulaic language are judged as more proficient in both spoken and written discourse (Boers, Eyckmans, Kappel, Stengers, & Demecheleer, 2006; Ohlrogge, 2009). Formulaic expressions are considered by a number of language scholars "the very centre of language acquisition" (Nattinger & DeCarrico, 1992, p. xv).

Formulaic sequences are, thus, institutionalised as an efficient and familiar way of performing many language tasks, and enable clear and concise language use. They are pervasive in human spoken and written discourse, and have a number of important uses in language. Formulaic expressions seem to be the preferred linguistic option by the members of a particular speech community in a variety of communicative situations. Therefore, formulaic expressions are considered to be not only useful but also essential for an efficient and appropriate use of language (Schmitt & Carter, 2004). "These chunks of lexis do more than just name things, they also have a pragmatic element. They enable you [not only] to talk about things, [but] to do things. This raises the status of collocation to much more than just 'words which go together'" (Morgan Lewis, 2000, p. 15). "Formulaic language is intrinsically

connected with functional, fluent, communicative language use” (Schmitt, 2005, p. 16).

1.2.4. The multifaceted nature of formulaic language

Formulaic language is, as noted above, prevalent in the adult linguistic system. It is pervasive in language, and comprises a rather large proportion of written and spoken discourse. Pawley and Syder (1983) suggest that “the number of sentence-length expressions familiar to the ordinary, mature English speaker probably amounts, at least, to several hundreds of thousands” (Pawley & Syder, 1983, p. 213). Mel’Cuk (1995) suggests that multi-word expressions (‘phrasemes’) outnumber single words by a ratio of at least 10 to 1. It has been claimed that the reason for the prevalence of formulaic expressions in human speech seems to be the principle of economy of effort (Sinclair, 1987; Wray & Perkins, 2000), since the access to “ready-made frameworks on which to hang the expression of our ideas” (Perkins, 1999, pp. 56, in Wray (2002, p. 16)) eases the mind’s processing load.

The claim that formulaic language is ubiquitous in language use has been supported by a vast amount of research. Several studies using a variety of methodologies to investigate different types of multi-word units, including corpus studies, have consistently produced results showing that formulaic language constitutes a large proportion of discourse, and that people’s language use is typically repetitive. Sorhus (1977) estimated that speakers use one formulaic lexical item every five words. Biber et al. (1999) calculated that lexical bundles constituted 28 per cent of the spoken discourse they analyzed, and 21 per cent of their academic prose corpus. Erman and Warren (2000) claim that formulaic sequences comprised 58.6 per cent of the spoken English discourse, and 52.3 per cent of the written discourse they

examined. Some researchers have even gone as far as affirming that it is possible that up to 70% of everything we say, hear, read, or write is to be found in some form of fixed expression (Hill, 2000).

Formulaic language is extremely versatile and proof of this is the diversity of terms and definitions that have been used to describe it. According to Wray (Wray, 2000a, 2002; Wray & Perkins, 2000), more than 50 terms have been used to refer to prefabricated phrases or strings of words that are considered to be within this category. Among these terms are: amalgams, chunks, clichés, collocations, complex lexemes, composites, conventionalised forms, fixed expressions, formulas/formulae, frozen phrases, holophrases, idioms, lexical phrases, multi-word items/units, prefabricated routines and patterns, ready-made expressions/utterances, etc. (Wray, 2002, p. 9).

Schmitt (2000) indicates that although the study of formulaicity has traditionally involved those multi-word units with a single meaning ascribed to more than one word, such as phrasal verbs (*give up*), compounds (*freeze-dry*), and idioms (*burn the midnight oil*), evidence from research using spoken and written corpora has revealed that the phenomenon of *collocation*, defined as ‘the tendency for words to occur together in discourse’ (Schmitt, 2000, p. 400), and which includes expressions that range from two-word combinations such as *tall tree* (and not *high tree*), spreads further to include long chains of words that are so frequently used that they become fixed and can be treated as single lexical units in their own right (e.g., *to make a long story short* or *to recover from a major operation*). According to Schmitt (2000), the most common terms used to refer to these long word sequences are *lexical chunks* and *lexical phrases*.

In a later study, Schmitt (2005) distinguishes between other types of formulaic language such as variable expressions⁷ which are phrases with some fixed elements and semantically-constrained gaps (____ *think nothing of* ____; a (*time period*) ago), and lexical bundles⁸ which he defines as recurring strings of words, or extended collocations, identified by corpus analysis using a criterion based on a minimum number of times of occurrence (e.g., *have a look at; you know what; the fact that*). Schmitt (2005) points out that while variable expressions are closely connected with meaning and functional language use, lexical bundles do not have a clear relationship with any meaning of language function until they team up with other words or lexical bundles.

Formulaicity is, thus, a multifaceted phenomenon and cannot be described on the basis of a single criterion. Phrasal expressions expand over a wide and overlapping range of word groups, making it difficult to assign the different multi-word units to particular categories (Shin & Nation, 2008). Hence, formulaic expressions are difficult to classify as they often fit in more than one category (Van Lancker-Sidtis & Rallon, 2004). Besides, formulaic expressions are fairly heterogeneous and diverge in length, transparency / opacity and syntactic flexibility (Siyanova-Chanturia & Martinez, 2014). They “can be long (*You can lead a horse to water, but you can’t make him drink*) or short (*Oh no!*), or anything in between” (Schmitt & Carter, 2004, p. 3).

Idioms are an important subcategory of multi-word units and have been the subcategory most investigated in previous psycholinguistic research. Given that they are non-compositional but usually also have non-figurative readings, they represent a good test for literality versus figurativeness. Since idioms are more likely to elicit

⁷ Sinclair’s (2004) term for this kind of formulaic sequences.

⁸ Biber et al.’s (1999) term for these recurring bundles of words.

strong cloze responses and having decided to use cloze test methodology in this investigation, they were thus selected as the stimulus items for this research. Hence a comprehensive literature review on the nature and some characteristics of idioms is significant for the research reported in this work.

1.3. Idioms

“If natural language had been designed by a logician, idioms would not exist.”

P.N. Johnson-Laird (Cacciari & Tabossi, 1993, p. vii)

1.3.1. Compositionality of idioms

Idioms constitute a complex yet pervasive phenomenon in spoken and written language. They are ubiquitous and extensively used in spoken and written discourse (Cacciari & Tabossi, 1993; Jackendoff, 1995; Kuiper et al., 2009; Mel'cuk, 1995; Pawley & Syder, 1983; Van Lancker-Sidtis & Rallon, 2004), and these characteristics are not restricted to the English language, but they seem to spread through every other language (Bobrow & Bell, 1973; Corpas Pastor, 2003; Escaip, 2008; Piirainen, 2012; Weinreich, 1969). Idioms have been defined by some scholars as multi-word lexical items whose overall meanings are not compositional, that is, not related to the meanings of the individual words they comprise, and, thus, cannot be retrieved through the syntactic analysis of the constituent words, but directly from the mental lexicon of the speaker as wholes (Bobrow & Bell, 1973; Gibbs, 1980; Swinney & Cutler, 1979).

However, findings from vast psycholinguistic research show that not all idioms are noncompositional and that the semantic properties of their individual

constituents play an important role in their comprehension and use (Cacciari & Glucksberg, 1991; Cacciari & Tabossi, 1988; Cutting & Bock, 1997; Gibbs Jr & Nayak, 1989; Gibbs, Nayak, & Cutting, 1989; Glucksberg, 1993; Holsinger, 2013; Kuiper, van Egmond, Kempen, & Sprenger, 2007; Nayak & Gibbs, 1990; Sprenger et al., 2006).

In any case, it is widely agreed that an idiom is a unitary expression that has a meaning beyond that of its components (Glucksberg, 1993), and also that idioms, whether they are regarded as compositional or noncompositional, are characterized by a high degree of internal cohesiveness (Cacciari, 1993). As such, they pose a big challenge to the traditional theories of language storage, access and comprehension grounded on the principle of compositionality (Havrila, 2009).

According to some scholars (Bobrow & Bell, 1973; Gibbs, 1980; Swinney & Cutler, 1979) an idiomatic expression can be described as a multi-word unit whose meaning is not constructed compositionally and cannot be analyzed using the rules of grammar. From this viewpoint, idioms are noncompositional unitary lexical items. They have been likened to single [long] words whose meanings are opaque until they are learned. The meaning of the idiom itself is, thus, not determined by the meanings of its constituent words that are semantically empty. Thus, an idiom has to be already stored in the mental lexicon of a speaker, and its meaning has to be retrieved from the lexical memory, without the need of applying any syntax rules.

However, it has also been claimed that idioms cannot be explained only in terms of their noncompositionality, and that the meanings of the individual elements of many idioms do contribute to their conventional interpretation and use (Cacciari & Tabossi, 1988; Gibbs Jr & Nayak, 1989). The internal heterogeneity of idioms is extensive and it is essential to support a more complex definition that contemplates at

the same time both cases of noncompositionality and of semantic transparency.

Cacciari (1993) states that in the case of many idioms, some of their parts possess identifiable meanings that contribute to the figurative meaning of the idiomatic expression as a whole. In other words, the idiomatic meaning is not totally arbitrary and it is acquired through some kind of meaning transfer mechanisms not fully specified.

Under this perspective idioms are then holistic and analyzable at the same time: An idiom's global meaning may be independent of the meaning of each of its constituents, but, for the majority of idioms, speakers can guess the relationship between the meaning of the individual words in an idiom and its idiomatic referent (Nayak & Gibbs, 1990). "Idioms are not monolithic, nondecomposable units" (Cacciari & Glucksberg, 1991, p. 222). Cacciari and Glucksberg (1991) add that the interpretation of an idiom depends, like in the case of any other sentence, on the context, and on the degree to which the meanings of the individual words it comprises contribute to the meaning of the sequence itself.

Cacciari and Glucksberg (1991) affirm that the literal meanings of the lexical components of multi-word sequences, whether they constitute idioms or literal sentences, play significant roles in speech:

- First, they may speed up idiom comprehension.
- Second, they may grant syntactic and lexical flexibility to idiomatic expressions by enabling speakers to produce comprehensible variants of familiar idioms. For instance, lexical flexibility allows speakers to substitute words in idioms, which, despite this, keep their original meaning.

- Third, the meanings of the individual words of idioms are also involved in the phenomenon called *semantic productivity*, which permits speakers to use these meanings in order to produce an idiom with a new meaning.
- Lastly, the semantics of the elements of an idiom can also be implicated in the idiom phenomenon *discourse productivity*, as when in conversation a response to an idiom may use the meanings of the words in such idiom⁹.

1.3.2. Semantic productivity of idioms

It has been proposed that the literal meanings of the constituent words of idioms play an important role in their interpretation and in the production of new idiomatic expressions. Research on the semantic and syntactic properties of idioms has shown that speakers have the ability to understand and create new idioms by modifying some aspects of an idiom's individual constituent words (McGlone, Glucksberg and Cacciari, 1994; Glucksberg, 1993; Cacciari and Glucksberg, 1990). Thus, the literal meanings of the composing words are used when available and necessary, and speakers may alter these words in a 'pragmatically sensible way' to change the idiomatic expression and produce a new one. Semantic productivity involves the use of lexical and syntactic operations to produce new idiomatic meanings from previous ones. However, Cacciari and Glucksberg (1991) also note that semantic productivity may be independent of syntactic and lexical flexibility, and semantic analyzability.

⁹ "Tom: Did the old man kick the bucket last night?
Joe: Nah, he barely nudged it!"
(Cacciari & Glucksberg, 1991, p. 221)

These authors offer an example of semantic productivity using the idiom *speaking one's mind* catalogued as a nondecomposable idiom by Gibbs et al. (1989) to describe some syntactic and lexical productive operations:

1. Adjectival modification, as in “When drugs are involved, it’s time to speak your *parental* mind.”
2. Adverbial modification, as in “Did he *finally* speak his mind?”
3. Quantification, as in “As a diverse but purposeful group, you should speak your *minds*.”
4. Tense marking, as in “He *spoke* his mind.”
5. All of the above, as in, “The tenants’ association finally spoke their collective minds” (Cacciari & Glucksberg, 1991, p. 224).

Semantic transferences may take place when some of the words comprising an idiom acquire the conventionalized figurative meaning they have as part of such idiom, and so the idiomatic words acquire an additional meaning other than their literal one. This process is basically the result of the repeated usage of an idiom. Cacciari (1993) provides as an example the expression *spill the beans*, where the word *spill* may acquire a “divulge” sense in some instances. Research on the slips of the tongue phenomenon shows that speakers often replace some idiomatic expressions’ words with others that are semantically related, e.g., *swallow the bullet* instead of *bite the bullet* (Cacciari, 1993; Cacciari & Glucksberg, 1991).

Cacciari (1993) states that the high semantic productivity of idioms is also commonly reflected in intentional exchanges used in media advertising and other language forums. In such cases, simultaneous semantic processes take place in the

interpretation of the literal and figurative meaning of the words comprising an idiom. “It is a movement that backgrounds and foregrounds the literal and the figurative meanings of the words, that is, pushes them on stage and back to the backstage, according to the communicative needs of the moment. [...] We are aware of the existence and interplay of the two meanings: the literal and the figurative” (p. 38).

Therefore, idiomaticity embraces various linguistic occurrences, from partly frozen expressions where their constituents keep ‘roughly’ the meaning they have as single words, to expressions with meanings completely different from the meanings of the individual lexical items they comprise (Cacciari, 1993). “Idioms have a syntactic structure that at times is frozen, but on occasions is very flexible and can be modified in various ways, depending also upon the extent to which the figurative meaning of the string is related to its literal meaning” (Cacciari & Tabossi, 1993, pp. xii-xiii). Thus, the flexibility and productivity of an idiom is determined by the functional relationship between the elements of the idiom and the meaning of the idiom itself (Cacciari & Glucksberg, 1991).

1.3.3. Typology of idioms

The multifaceted nature of idioms prevents their categorisation being an easy task. Compositionality degree and transparency/opacity level have been the most common aspects upon which some idioms’ categorisations have been elaborated and used in a number of studies to investigate their characteristics and the mechanisms involved in their comprehension.

1.3.3.1. Nunberg's compositionality classification of idioms

Nunberg (1979) claims that idiomaticity constitutes a semantic phenomenon rather than a syntactic one. He proposes a classification for idioms based on their degree of compositionality, and semantic analyzability or decomposability:

1. Normally decomposable idioms. Analyzable idioms whose parts relate directly to their idiomatic referents (e.g., *pop the question*, *keep the pot boiling*; *break the ice*). For instance, the elements of the idiom *pop the question* map directly onto their idiomatic referents “suddenly ask” and “marriage proposal”.
2. Nondecomposable idioms. Opaque idioms constituted by words that do not map onto the idiomatic meaning; e.g., the elements of the idiom *kick the bucket* do not have any semantic relationship with the idiomatic meaning of *die*.
3. Abnormally decomposable idioms. Those idioms which are situated between the two extremes, where their words do not map directly onto their idiomatic meanings, but relate metaphorically to their idiomatic referents instead, i.e., speakers can recognize the relation between the meanings of the elements of the idiom and the idiomatic meaning on the grounds of conventional metaphors that regulate this mapping (e.g., *spill the beans*, *hit the ceiling*, *hit the panic button*, *throw in the sponge*). For example, in the idiom *spill the beans* there is not a clear semantic relationship between the words *beans* and *secrets*, but because the meanings of idioms are grounded on metaphorical mappings of information between their individual components and

their figurative referents, the figurative interpretation of this idiom relies on people's historical knowledge of the underlying metaphorical concept that MIND IS A CONTAINER and IDEAS ARE ENTITIES. Thus, the mental mapping of someone tipping over a container with beans to a person revealing some precious secrets allow speakers to comprehend such idiomatic expression (Gibbs, Nayak, & Cutting, 1989).¹⁰

Gibbs & Nayak (1989) used Nunberg's compositionality classification of idioms and found that people are able to reliably distinguish these three types of idioms. They also concluded that decomposable idioms are more semantically flexible, and syntactic and lexical variants are considered feasible for them without changing their meaning, while for nondecomposable idioms such variants are not acceptable. Findings of Gibbs et al.'s (1989) research indicate that it is easier to understand compositional idioms than noncompositional idioms.¹¹

1.3.3.2. Cacciari & Glucksberg's functional typology of idioms

On the other hand, Cacciari & Glucksberg (1991) assume that idioms are processed semantically and syntactically, just as any other forms of natural language. In line with Cacciari and Tabossi's (1988) findings, they believe that the literal meanings of the different words in an idiomatic expression are activated and stay activated during the process of idiom comprehension. They suggest that idioms may belong to two different kinds: those idioms where there is not an obvious relationship

¹⁰ All these examples of idioms have been taken from Cacciari & Glucksberg (1991, p. 222), and Cacciari (1993, p. 35).

¹¹ These findings support Gibbs & Nayak's decompositional hypothesis, which will be described in more detail in a further section of this chapter.

between the different elements that constitute an idiom and its meaning (noncompositional or non-analyzable idioms), and those ones where some sort of relationship between their components seems to exist (compositional or analyzable).

Thus, non-analyzable idioms can be treated as single lexical items, e.g., ordinary long words where the meaning of the word itself is not the sum of the individual morphemes that constitute it, such as the idioms *by and large* and *spic and span*. As for analyzable idioms, Cacciari and Glucksberg claim that a classification can be made based on the way that the literal meaning of the individual words of an idiom map onto the meaning of the idiom itself. “The *analyzability* of an idiom is the extent to which a speaker of the language can trace the relations between the two levels of meaning (literal-local and figurative-global)” (Cacciari, 1993, p. 35).

Therefore, Cacciari & Glucksberg (1991) propose a functional typology of analyzable idioms:

- a) Compositional-opaque, where the relations between the idiom’s constituents and the meaning of the idiom are not obvious, and the meaning of the individual elements limit interpretation and use (*kick the bucket*).
- b) Compositional and transparent, where there are semantic relations between the idiom’s meaning and its words’ meanings, due to metaphorical correspondences or because some of the words have individually acquired idiomatic meanings (*spill the beans*, *break the ice*). Nunberg and Gibbs et al.’s normally and abnormally decomposable idioms are comprised here, since this division is not considered to be functional in idiom interpretation and productive use.

- c) Quasy-metaphorical, which bear certain meaning based on their allusional content –‘they call to mind a prototypical or stereotypical instance of an entire category of people, events, situations, or actions’ (p. 18) (*giving up the ship*).

1.3.3.3. Cacciari’s opacity/transparency classification of idioms

Cacciari (1993, p. 39) suggested the categorization of idioms based on the concept of an existing continuum from opacity to transparency:

- a) Totally opaque idioms.
- b) Retrospectively transparent idioms: namely transparent once you either know the meaning (and this allows one to trace the correspondence between literal constituents and figurative referents) or are reminded of the episode or setting that originated the idiom.
- c) Directly transparent idioms: the senses of the words leading one to the idiomatic meaning of the string, perhaps by means of the recreation of an analogical or metaphorical mapping.
- d) Figuratively transparent idioms: idioms composed of other idioms, or parts that appear in other idioms or as metaphorical vehicles.

All of the classifications outlined above are functional. They rely on the notion that not all idioms are noncompositional and/or nondecomposable, and most importantly, that the linguistic forms of idiomatic expressions can contribute in many significant ways to the overall figurative meaning of the sequence (Vega-Moreno, 2001).

However, as Cacciari and Glucksberg (1991) claim, it is not possible for any classification to fully account for idiom flexibility or productivity, since “the internal semantics of the idiom and the discourse context will always be the functional determinants of idiom use and variation” (p. 231). Thus, when the variation of an idiom is motivated by some evident communicative drive, lexical substitutions, syntactic flexibility and semantic productivity are possible if those functional relations are maintained. Hence, compositionality, or analyzability, cannot be the sole determining factor for idiom flexibility and idiom productivity; it has been found that even nondecomposable (non-analyzable) idioms can be semantically productive ¹².

It seems relevant to add here some observations on the meaning of ‘compositionality’ versus ‘decomposability’, terms that according to Abel (2003) have been often wrongly used as synonyms: “Note that decomposability is a feature of idioms that is based on speakers’ judgements and is therefore relevant from a psycholinguistic point of view, whereas compositionality [...] is a theoretical assumption about the combination of syntactic constituents and their phrasal or sentential meanings, which is important within linguistic theories such as generative grammar. From a generative, syntactic point of view, only the literal meaning of an idiom is compositional, while the figurative meaning is always noncompositional. Therefore, decomposable idioms can be partly compositional, whereas nondecomposable idioms are usually truly noncompositional” (pp. 332-333).¹³

¹² For instance, the idiom *speak one’s mind*:

Mary: Did Harry speak his mind on the bond issue?

Sally: He can’t speak his mind if he doesn’t even know it yet! (Cacciari & Glucksberg, 1991, p. 228).

¹³ For instance, the idiom *miss the boat* is considered compositional and decomposable since it has a compositional literal reading, and its verbal constituents contribute to its overall figurative meaning. On the other hand, *kick the bucket* has a compositional reading that denotes its literal meaning, but the figurative meaning is noncompositional since none of its constituents contributes to the overall idiomatic meaning ‘to die’, reason why it stands as a nondecomposable idiom. And then again, the idiom *shoot the breeze* has no compositional reading at all (neither literal nor figurative), so besides being a noncompositional idiom it is a nondecomposable one (Abel, 2003).

1.3.3.4. Nunberg's orthogonal semantic classification of idioms

In a further classification, Nunberg et al. (1994) propose that idioms may vary not only in one semantic dimension, i.e., compositionality, but along three orthogonal semantic dimensions: compositionality, conventionality, and transparency.

1. Compositionality can be defined as the ease with which the literal meanings of the constituent words of an idiom can be mapped onto the idiomatic meaning of such expression, once the speaker has met and acquired the idiomatic meaning.
2. Conventionality refers to the degree to which the meaning or use of idiomatic expressions “cannot be predicted, or at least entirely predicted, on the basis of a knowledge of the independent conventions that determine the use of their constituents when they appear in isolation from one another” (Nunberg et al., 1994, p. 492). According to Titone and Connine (1999), conventionality refers to the ability of the speaker to retrieve an idiomatic meaning without having all the contextual information (i.e., understanding an idiom for the first time) in a particular language environment, regardless how the meanings of the constituent words map onto the idiomatic meaning. Titone and Connine (1999) suggest that the conventionality of an expression may be related to the frequency with which such expression is met in language.
3. Opacity (or rather transparency) refers to the degree of ease with which the motivation for the use of an expression can be comprehended.

According to Nunberg et al. (1994), all these three dimensions have been misinterpreted and grouped as compositionality, a term that has often been incorrectly used in idiom research to refer to all kinds of semantic relations between the overall figurative meaning of an idiom and its comprising individual constituents. To avoid this misconception, Nunberg and colleagues propose to label idioms as idiomatic combinations (i.e., decomposable idioms) and idiomatic phrases (i.e., nondecomposable idioms), based on their degree of compositionality. From this perspective, the figurative meaning of idiomatic combinations is distributed across the lexical constituents of the string of words, whereas the idiomatic meaning of idiomatic phrases is not distributed across the component words of the phrase. Both idiomatic combinations and idiomatic phrases may also be characterized by their conventionality and transparency.¹⁴

¹⁴ Titone and Connine (1999) adopted Nunberg et al.'s (1994) idiomatic classification scheme in which idioms are classified according to their degree of compositionality, conventionality and transparency, to propose their Hybrid Model of Idiom Comprehension that considers idioms both as multi-word lexical units and compositional sequences of words. This model will be described in a further section of this chapter.

DIFFERENCES BETWEEN NATIVE AND NON-NATIVE SPEAKERS IN FORMULAIC LANGUAGE ACQUISITION, PROCESSING AND USE

1.4. Formulaic Language Acquisition

Research on formulaic language has concentrated on its detection, description and processing rather than in the investigation of the mechanisms of its acquisition, i.e., the processes that explain how language users acquire phrasal vocabulary in the first instance (Kuiper et al., 2009). As Schmitt and Carter (2004) point out, it is probably fair to say that there is some paucity in the empirical research of formulaic language acquisition. Some theoretical notions on the processes of acquisition of formulaic language by native and non-native speakers of a language as well as some research findings pointing out to the possible causes for the large differences between these two groups are presented next.

1.4.1. Acquisition of formulaic language by native speakers

It has been claimed that research on formulaic language in first language acquisition has mainly focused on longitudinal accounts of language development (Kuiper et al., 2009). Wray and Perkins (Wray, 2002; Wray & Perkins, 2000) suggest a four phase developmental model where a significant amount of formulaic language is acquired in early childhood, then oddly vanishes for a few years, and reappears during adolescence, increasing consistently towards adulthood. This model can be summarized as follows (Schmitt & Carter, 2004):

In phase 1, which starts at birth, the child basically uses holistically processed language by identifying, selecting, and storing formulaic sequences that are socially meaningful within the linguistic environment. These sequences will subsequently

allow the activation of the analytical processes of language in phase 2. During phase 2, which starts between 20 and 30 months of age and lasts until the age of 8 years, the child will show a preference for using analytical mechanisms to process language. This is when grammatical awareness starts, and throughout this period the child will analyse and re-combine the constituents of the expressions previously acquired using the rules of grammar. Analytic language will then prevail, but the amount of formulaic language will still show an increase since the child's language is developing in its totality. It is in phase 3, which continues until around the age of 18, when the analytical system has been firmly developed, and formulaic language recovers its predominance over analytical language. By phase 4, a balance between both systems of language processing, analytic and holistic, has been achieved, and adult patterns of formulaicity are established.

Therefore, in Wray and Perkins' (2002) language acquisition developmental model the balance of formulaic language and creative language varies throughout the different phases of first language acquisition. Schmitt and Carter (2004) point out that this balance may as well vary from individual to individual, depending on the learning style of each child. It has been argued that expressive children, or 'system learners', have a tendency to learn entire expressions, whereas referential children, or 'item-learners' are inclined to learn more single words, mostly nouns. The motives for these predilections may be psycholinguistic, practical (what the child thinks language is valuable for), or a reflection to the child's linguistic input from the environment. However, "regardless of the underlying reason, there seems to be a link between the need and desire to interact and the use of formulaic sequences" (Schmitt & Carter, 2004, p. 11). Children seem to use formulaic expressions both as a communicative and as a learning strategy considerably more than adults (Yono, 1989).

Some scholars propose, thus, that formulaic language precedes creative language. They argue that children may build up generative grammar by segmenting the formulaic expressions already acquired in earlier life into smaller components (Peters, 1983; Wray, 1998, 2002; Wray & Perkins, 2000). According to Peters (1983), children are exposed to a continuous stream of speech sounds constituted by chunks that are frequently comprised by more than one word. Children then have to get hold of smaller pieces in an effort to understand their meaning and add them to their lexical repertoire.

Peters (1983) notes that children frequently use in their speech formulaic lexical items with meanings totally unrelated to their components. She quotes Olson's (1973) comments regarding the ability of children for memorising and generating complex vocabulary and expressions: "Such utterances manifest structures that are nonproductive in the child's language at that particular stage, but the utterances are used as a unit for some specific semantic or pragmatic purpose without the child's knowing in some sense the internal structure of the string" (Olson, 1973, p. 156).

Peters (1983) claims that the initial extraction of units starts with the children considering any utterance a potential entry for their lexicon, so they reproduce it and store it as a whole. However, it can be objected that children's memory capacity is limited, thus they would not be able to remember very long utterances as single units. Therefore, to support her claim, Peters puts forward some relevant research where the results show that younger children's memory capacity is no more constrained than that of older children, either for both non-linguistic and linguistic information (Bloom, 1970; DeLoache & Brown, 1997; Olson, 1973; Snow, 1983). Evidence shows that young children are able to remember and reproduce very long fragments of speech.

Peters (1983) suggests that the clues that children have for this initial extraction process are:

- Meaning based on a distinct connection to a clear context.
- Silence bordering the utterance and separating it from others.
- Suprasegmentation based on the utterances' prosodic characteristics, or 'intonational packaging', which implies that "early forms will take the shape of units which are separately packaged by intonation in the input" (MacWhinney, 1978).
- Tune or 'intonational contour' that makes a certain chunk of speech more noticeable and thus more memorable.
- Rhythm, since each utterance constitutes a rhythmic pattern of speech.

Peters (1983) claims that young children start developing a grammar once they have learned how to use correctly a number of holistic chunks through the initial extraction process mentioned above. However, it has also been argued that children segment certain sequences only when this segmentation is potentially useful for social communication purposes. For the most part, children will tend to process language in a holistic way and will produce a number of formulaic sequences that will be retained into adulthood.

1.4.2. Acquisition of phrasal vocabulary by non-native speakers

As Wray (2002) puts it: "To know a language you must know not only its individual words, but also how they fit together" (Wray, 2002, p. 143). Proper knowledge and use of formulaic language is vital to sound like a native speaker

(Pawley & Syder, 1983; Van Lancker-Sidtis & Rallon, 2004; Wray, 2000a; Wray & Perkins, 2000). On the whole, evidence reveals that second language learners have great difficulties acquiring and producing nativelike formulaic language. In contrast to native speakers who process language largely by means of the holistic system, non-native speakers may seem to concentrate more on single words than on strings of words (Kuiper et al., 2009). It seems that only a few non-native speakers fully acquire the native collection of formulaic sequences (Pawley & Syder, 1983).

The acquisition of formulaic sequences by non-native speakers may not necessarily follow the same patterns that occur in the process of acquiring phrasal vocabulary by native speakers. According to Kecskés (2000), there are two different approaches to the role that formulaic language plays in second language acquisition. On the one hand, it has been proposed that formulaic expressions are the base for creative language. Many scholars (Nattinger & DeCarrico, 1992; Pawley & Syder, 1983; Wong-Fillmore, 1976) suggest that in the process of acquiring a second language, learners firstly acquire unanalyzed ‘chunks’ of lexis, which are broken down over time into their single lexical components and combined with other elements using the syntactic rules of the language.

Therefore, it has been proposed that in the early stages of second language learning many useful formulaic sequences develop quickly into the vocabulary of either classroom-taught or naturalistic adult learners. The main purpose would be to achieve success in communicating with others within their linguistic environment (Nattinger & DeCarrico, 1992; Wray, 2002; Wray & Perkins, 2000).

However, in later stages of learning, the acquisition of formulaic sequences, and consequently their use, falls behind expectations. It appears that second language learners rely a great deal on the creative language processes, and tend to segment

formulaic sequences through the grammatical analysis of their components by applying the grammar rules (R. Ellis, 2005; Nattinger & DeCarrico, 1992; Wray, 2002). This analytical process leads second language learners to identify within the holistically learned sequences single lexical items that are learned independently, and then perform, partially or fully, an inevitable segmentation (Wray, 2002). Second language learners “tend to *over*-generate, producing grammatical utterances that are simply not idiomatic” (Wray & Perkins, 2000, p. 23). Therefore, proficient learners often produce flawless sentences constructed using the rules of grammar that native speakers would never use (Wray, 2002).

Nattinger and DeCarrico (1992) maintain that this segmentation process, which is executed on analogy with similar sequences, it is a valuable tool for language learners who “break these chunks down into sentence frames that contain slots for various fillers” (Nattinger & DeCarrico, 1992, p. 115), expanding significantly their ability to communicate. These authors consider that lexical phrases are an ideal unit for language teaching as they are central to the processes of the acquisition, comprehension and generation of language. Ellis (2005) shares this view and claims that the acquisition of formulaic sequences constitutes a foundation for the “development of a rule-based competence” (R. Ellis, 2005, p. 211). However, Wray (2000a) argues that there is an incongruity within this essentially analytic approach to teaching formulaic sequences, since the ‘very nature’ of these expressions is fundamentally holistic.

Thus, when comparing the patterns of formulaic language acquisition by non-native speakers with those of native speakers, it appears that second language learners linger in phase 2 or 3, and they do not go further to phase 4 where the balance between creative and formulaic language settles (Wray & Perkins, 2000).

However, in contrast to Wray and Perkins's (2000) assertion above, it has been observed that non-native speakers learn more formulaic expressions as they progress in a new speech community. Research evidence has revealed that, even though they do not learn as many formulaic sequences as native speakers do, proficient non-native speakers do acquire and make use of formulaic sequences (Durrant & Schmitt, 2009, 2010; Wolter & Gyllstad, 2013). Since input and the context of that input are vital in the process of learning a second language, second language learners' deficit in formulaic language is more likely to be the result of inadequate or insufficient exposure to the target language, rather than of an inherent inadequacy of non-native speakers for learning phrasal vocabulary.

On the other hand, some researchers propose that formulaic language plays only a marginal role in second language development (Bohn, 1986; Weinert, 1995), or, furthermore, that there is no interface between formulaic language and creative language, because these types of language are generated in neurologically different ways (Krashen & Scarcella, 1978). In the same line of thought, Kecskés (2000) claims that "syntactic development and pragmatic development do not go hand in hand in the acquisition of a second language" (Kecskés, 2000, p. 617). He argues that the role played by formulaic language in second language learning cannot be generalized since it depends on the degree of fixedness and compositionality (i.e., semantic transparency) of the expression. Hence, in Kecskés's (2000) opinion, whereas in some cases second language learners are able to devise how formulaic sequences are built from words, in other cases breaking down multi-word expressions may be more harmful than beneficial to language learners, because the lexical constituents are not either functional and/or semantically related to the overall meaning of the expression.

Bishop (2004) believes that a reason of the difficulty of adult second language learners for acquiring formulaic language may be the lack of awareness of this phenomenon. He claims that the non-detection of the holistic form of idiomatic expressions hinders the capacity of the speakers in learning and storing these sequences as single units. This author emphasizes that in order to learn a formulaic expression one must recognize it first. However, while unknown single words are perceived more easily because they are 'clearly delineated', native speakers have problems in recognizing formulaic expressions due to their inconsistent shape. In most cases formulaic sequences are compositional and it is difficult for non-native speakers to recognize them as whole linguistics units (Bishop, 2004, p. 229). Bishop investigated the effects of typographic salience of formulaic sequences in a text on the readers' eagerness to find out their meaning, and the contribution of this glossing to these expressions being learned, obtaining in both cases only moderate positive correlations.

Jones and Haywood (2004) also explored the awareness of non-native speakers in a study with pedagogical purposes. They highlighted a range of formulaic sequences during a ten-week course for EAP (English for Academic Purposes) students, through repeated exposure and discussion. The results revealed an increased awareness of the unitary nature of formulaic sequences, but this awareness only produced a minor enhancement in the students' production of this kind of expression, and an even smaller improvement in the production of phrasal vocabulary in their essays.

Another study related to the subject of awareness is Van Lancker-Sidtis's (2003) research that examined the phonological form of formulaic sequences in spoken language, and investigated the auditory recognition of idioms by highly

proficient second language speakers. In a preceding study (Van Lancker, Canter, & Terbeek, 1981), it was found that native speakers of English were able to discriminate between idiomatic and literal sentences using prosodic cues. The results of Van Lancker-Sidtis (2003) subsequent research indicated that fluent highly proficient non-native speakers scored significantly lower than native speakers in distinguishing sentences with literal meanings from sentences with idiomatic meanings in a listening task. She proposes that the acquisition of formulaic expressions and their prosodic characteristics may be acquired together by native speakers, and that these prosodic cues are language specific.

Sociocultural integration has also been considered an important factor in the acquisition of formulaic language by non-native speakers. “The culturally sanctioned forms of words symbolize the identity of the society, and mastery of them is a mark of status and trust” (Wray, 2002, p. 76). It is undeniable that important cultural values are embedded in the language of any linguistic community. The sociocultural aspects of the society determine to a great extent the construction and the form of the speech used by the language users (Corpas Pastor, 1996).

According to Coulmas (1979), routine formulas “are [prefabricated] expressions whose occurrence is closely bound to specific social situations and which are, on the basis of an evaluation of such situations, highly predictable in a communicative course of events” (Coulmas, 1979, p. 240). This author argues that the situational frames for these expressions are cognitive schemas, which include the necessary information that triggers their appropriate use in a particular situation. These conceptual structures represent the prototypical and conventional perception of the members of a linguistic community, and are a true reflection of their culture.

In the same line, García-Page (1995) argues that phraseology is deeply rooted in the history of any linguistic community, tightly linked to its idiosyncratic values: many formulaic expressions represent either contemporary linguistic stereotypes, or ‘archaeological’ vestiges of the language (García-Page, 1995, p. 155).

Corpas Pastor (1996) argues that it is precisely due to this characteristic that many formulaic expressions do not have equivalents in other languages, since the situations that are sanctioned by them are culture specific. An example that she offers is the Arabic expression *Na ‘īman* (God blesses you) which is addressed to somebody who has just taken a bath or cut their hair, while this situation does not need any particular comment in other languages such as English, Spanish, French or German (Corpas Pastor, 1996, p. 176).

Formulaic language is pivotal in a community’s identity. The speakers aspiration to ‘sound like others’ makes it likely that speech communities will possess their own collection of particular formulaic sequences, since language users will store them after repeatedly hearing them in the speech of others (Wray, 2002). The use of formulaic expressions constitutes, thus, a kind of social grammar or linguistic etiquette that emerges from the aspiration of speakers to acquire a fluent, efficient and coherent discourse within a particular language community (Corpas Pastor, 1996).

“Language learning is culture learning [...] Nativelike competence in a language is only possible if it is accompanied by the acquisition of an appropriate native culture” (Kuiper & Tan Gek Lin, 1989, p. 304). Hence, cultural integration should be expected to result in non-native speakers’ desire to sound like the native speakers of the target language community, with the subsequent enhanced learning of nativelike expressions, i.e., formulaic language.

Therefore, on the basis of the significant effects of culture on formulaic language use, some studies have been carried out to investigate the relationship between cultural integration and formulaic language, and some evidence shows that there may be a significant relationship between the level of integration into the second language cultural environment, and the acquisition of formulaic expressions by second language learners. Interaction needs and the use of formulaic expressions seem to be correlated (Schmitt & Carter, 2004).

Wong Fillmore's (1979) findings, cited in Schmitt and Carter (2004), revealed that among eight of the strategies used by five Mexican children in order to integrate to the target culture, three involved the learning and use of formulaic expressions.

Dörnyei, Durow, and Zahran (2004) believe that the acquisition of formulaic sequences "is a socially-loaded process" (Dörnyei et al., 2004, p. 87), and second language learners must incorporate cultural elements of the target language community into their language learning process. In their opinion, many second language learners fail when learning a language because they consider this to be a separate process from learning the second language culture. The results of their exploratory study on the links between language acquisition and cultural integration did not reveal significant correlations between individual differences and the extent of formulaic language acquisition, but suggested that gains in phrasal vocabulary correlate with language aptitude, motivation and sociocultural adaptation. For success in acquiring formulaic sequences, only high levels of the first two factors can compensate for the absence of acculturation, whereas high levels of the latter can counteract low levels of language aptitude and motivation.

Adolphs and Durow (2004) longitudinal study's results on the impact of the three factors mentioned above suggest that improvement in the use of common

formulaic sequences over time was greater for a student who was highly socially integrated compared to that of a student with cultural integration difficulties.

However, an exploratory study on the teaching of formulaic sequences to a group of non-native EAP (English for Academic Purposes) students did not find a significant correlation to language aptitude, language motivation, and language attitudes (Schmitt, Dörnyei, Adolphs, & Durow, 2004).

Additional contradictory evidence on the links of cultural integration and the use of formulaic expressions is found in the results of Siyanova and Schmitt (2007), which showed that the amount of exposure to the target language speaking environment did not increase the probability of second language speakers of using multi-word verbs. However, as Kuiper et al. (2009) point out, it may not be the amount of exposure that is significant, but the quality of exposure that second language learners experience when socially integrated into the native speaking community.

According to Kecskés (2000), while native speakers are supported by their sociocultural background knowledge and are aware of the pragmatic use of formulaic sequences, non-native speakers who have not lived in the target language community, or have lived there only for a restricted time, are not. Therefore, in the absence of a significant part of the required sociocultural background knowledge, non-native speakers often fail in the appropriate interpretation of pragmatically loaded formulaic expressions. “Findings indicate that the real difficulty of an adult L2¹⁵ learner may not necessarily be in the acquisition of the syntax of the target language (as has been almost taken for granted in the relevant literature for decades), but in the development of conceptual fluency in the L2, which requires a serious adjustment to the existing

¹⁵ L2 = Second language.

L1¹⁶ conceptual base that is the sociocultural heritage of native speakers” (Kecskés, 2000, p. 621).

Some further obstacles in the acquisition of formulaic language by non-native speakers have been proposed. For instance, it has been claimed that the speech addressed to second language speakers does not contain much phrasal vocabulary and, therefore, learners simply do not have the required exposure to these sequences. Thus, when in the process of looking for an appropriate expression, adult second language speakers will have to ‘make their best guess’ (Wray & Perkins, 2000).

However, studies of naturalistic learners reveal that in many cases they will use their non-native status as a means to withdraw themselves from the communicative situation if they are not confident enough to handle it (R. Ellis, 1994). Second language speakers may also downsize their social interactional needs to make them fit with their actual knowledge of formulaic sequences (Wray & Perkins, 2000). Evidence suggests that learners tend to avoid the use of these sequences, and they are inclined to include familiar expressions (made up analytically from single words) in their speech because they feel more confident with their use (Schmitt & Carter, 2004).

In many cases, besides their inadequate knowledge of language, non-native speakers often ignore the appropriate cultural ways required for social interaction. Thus, in order to fulfil their socio-interactional needs, they bring together a collection of formulaic sequences that alternate appropriate with inappropriate expressions, and interlanguage ones (Wray & Perkins, 2000). Second language speakers will then use their native language if they find out it works, and will also tend to use fused expressions that, although not being nativelylike, serve them to achieve their communication purposes (Wray, 2002). Kecskés (2000) suggests that when adult

¹⁶ L1 = First language.

second language learners do not have full access to the conventional conceptual structures associated with the forms of the target language, they make use of related conceptual representations of their native language, often resulting in lexical and/or pragmatic mistakes.

It has been observed that many of these unidiomatic expressions become fossilized and are incorporated into the lexical repertoire of the speaker, who will use them frequently, reducing the possibilities of using other more suitable alternatives. In addition, it appears that frequency of use facilitates these unidiomatic sequences developing into linguistic units that are stored in the mental lexicon of the second language speaker. Thus, although it might seem paradoxical, the patterns of language acquisition by non-native speakers “may be more supportive to the model [of formulaic language acquisition] than it first seems” (Wray & Perkins, 2000, p. 24).

1.5. Formulaic Language Processing and Use – Differences Between Native and Non-Native Speakers

Evidence from psycholinguistic research supports the notion that formulaic expressions are processed faster and more precisely than creatively generated language (Alali & Schmitt, 2012; Martinez & Schmitt, 2012). “In fact, there are compelling reasons to think that the brain represents formulaic sequences in long-term memory, bypassing the need to compose them online through word selection and grammatical sequencing in capacity-limited working memory” (Conklin & Schmitt, 2012, p. 45).

Consistent with this, it has been proposed that using formulaic language assists competent speakers be fluent (Schmitt, 2005; Schmitt & Carter, 2004). The

notion of the processing advantages that the use of formulaic language entails for native speakers has substantial support (Conklin & Schmitt, 2012; Kuiper, 1996; Kuiper & Haggio, 1984; Pawley & Syder, 1983; Siyanova-Chanturia, Conklin, & Schmitt, 2011; Underwood, Schmitt, & Galpin, 2004). Moreover, some scholars claim that the use of formulaic expressions also assists the listeners by reducing the processing effort needed to interpret an expression word-by-word (Graney, 2000; Hickey & Kuiper, 2000). Thus, the use of formulaic language benefits both the speaker and the listener by assisting the speaker's production and the hearer's comprehension (Wray, 2002; Wray & Perkins, 2000).

The assertions above have been generally made to refer to the processing advantages of formulaic language that native speakers enjoy. However, evidence on whether non-native speakers enjoy or not such processing advantages is mixed, and significant differences between native and non-native speakers in their approach to formulaic language have been found. For instance, it has been claimed that the acquisition of formulaic language by non-native speakers may follow different patterns from those observed in native speakers (Wray, 2002), with non-native speakers showing great difficulties learning phrasal vocabulary. Pawley and Syder (1983) affirmed that only a few (proficient) second language speakers acquire a nativelike inventory of formulaic expressions.

Along the same lines, it has generally been observed that second language speakers exhibit large shortfalls in the comprehension and their use of formulaic sequences, and that their performance, as compared to that of native speakers, is considerably poorer. In order to examine this disparity, a number of studies on how native and non-native speakers process formulaic language have been carried out.

In many cases, language scholars have opted to use idioms in their research “because idioms are clearly formulaic in nature since they represent idiosyncratic meanings which cannot generally¹⁷ be derived from the sum of the individual words in the string” (Conklin & Schmitt, 2008, p. 80). In addition to their formulaic character, a number of idiomatic expressions are susceptible of literal translation, a fact that would appear to facilitate the researcher’s task when investigating the processing of formulaic language versus novel language. Therefore, idioms have featured in many studies that examine the processing of formulaic language by native and non-native speakers.

In an auditory recognition study, Van Lancker-Sidtis (2003) investigated the influence of prosodic cues on the identification of either figurative or literal meaning of idioms for first language and second language speakers. Participants (native speakers of American and non-American English, proficient non-native English speakers, and ESL students) had to listen to literal and idiomatic tape-recorded expressions, and decide whether these expressions were spoken with an intended idiomatic meaning or a literal one. Results showed that both groups of native speakers performed significantly better than proficient non-natives, with ESL students performing at chance. These findings support the assertion on the overall poor performance of non-native speakers when dealing with formulaic language.

Researchers have also suggested that second language speakers seem to focus on single words rather than on sequences of words (Kuiper et al., 2009), and that non-native speakers tend to process idiomatic language, in a similar way to non-formulaic

¹⁷ The word ‘generally’ should be interpreted with caution since, as previously mentioned in this section, evidence from psycholinguistic research shows that not all idioms are noncompositional and that the semantic and syntactic properties of their individual constituents play a significant role in their comprehension and use (Cacciari & Glucksberg, 1991; Cacciari & Tabossi, 1988; Cutting & Bock, 1997; Gibbs Jr & Nayak, 1989; Gibbs, Nayak, & Cutting, 1989; Glucksberg, 1993; Holsinger, 2013; Kuiper et al., 2007; Nayak & Gibbs, 1990; Sprenger et al., 2006).

language, i.e., word by word. Cieřlicka (2006) suggests that this literal salience when interpreting idioms may result from the fact that second language speakers learn the literal meanings of single words long before they find these words contained in idiomatic expressions. Her literal-salience resonant model of second language idiom comprehension assumes “that literal meanings of idiom constituents will be more salient than figurative meanings of these constituents in decomposable idioms¹⁸ [and also] more salient than the overall figurative meanings of non-decomposable idiomatic phrases” (Cieřlicka, 2006, p. 121).

In Cieřlicka’s (2006) study, the participants, all Polish fluent speakers of English, had to listen to sentences containing familiar idioms (e.g., ‘Peter was planning to *tie the knot* later this month’) in a neutral context, and perform a lexical decision on one of two target words visually displayed during the listening. Two pairs of target words were constructed for each idiom: a pair including a word related to the figurative meaning of the expression (e.g., *marry*) and its control word (e.g., *limit*); and a pair comprising a word related to the literal meaning of the last word in the string (e.g., *rope*) and its control word (e.g., *ripe*). Results revealed faster response times to target words related to the literal meanings of the expressions than to the words associated with the figurative ones. Cieřlicka (2006) concluded that the stronger activation of literal meanings over figurative ones suggests that non-native speakers adopt a ‘strategy of reliance on literal meanings’ (Cieřlicka, 2006, p. 120) in idiom comprehension.

According to Cieřlicka (2006), this reliance on the literal meanings of the individual lexical constituents in the comprehension of idiomatic expressions by non-native speakers is also manifest in Abel (2003)’s Dual Idiom Representation (DIR)

¹⁸ Cieřlicka’s (2006) makes this assumption in line with Glucksberg’s (1993) phrase-induced polysemy hypothesis, which suggests that the individual lexical components of familiar idioms acquire the corresponding idiomatic meanings through frequent use within idiomatic contexts.

Model. The DIR model assumes that idioms are represented according to their compositional status: while ‘nondecomposable’ idioms require their own separate lexical entry, ‘decomposable’ idioms can be represented via the activation of the lexical entries of their individual components. Thus, Abel (2003) proposes that the activation of the idiom entry of a decomposable idiom is not needed during the comprehension process since its interpretation can be accomplished through the activation of its separate constituents’ lexical entries.

In Abel’s (2003) study, German non-native speakers of English were asked to judge the degree of compositionality of a number of idioms. Results revealed the participants’ tendency to rate opaque, non-decomposable idioms as decomposable. It was also found that the participants looked up the German translation of the words contained in opaque idioms more often than the words contained in decomposable idioms. In relation to this, a relevant assumption of Abel’s (2003) DIR model is that “non-native speakers do not develop as many idiom entries as native speakers, because the frequency with which non-natives encounter idioms is lower. Therefore, they more often have to rely on the constituent entries and their corresponding conceptual representations during idiom processing” (Abel, 2003, p. 348).

On the other hand, some psycholinguistic research has supported the notion that, although not to the same extent than native speakers, non-native speakers do acquire and are able to correctly use formulaic expressions in their linguistic output in the second language (Durrant & Schmitt, 2009, 2010; Wolter & Gyllstad, 2013). Therefore, it would be sensible to think that non-native speakers should also benefit from the processing advantages that have been awarded to formulaic language for native speakers.

Underwood et al. (2004) used an eye-moving paradigm to examine the processing advantages of formulaic language versus creative language not only for native speakers but also for proficient non-native speakers of English. The eye-tracking apparatus methodology allows the researcher to track the movement of the eyes and identify the precise words being looked at on the computer screen, and for how long. Underwood et al. (2004) embedded twenty idiomatic expressions in reading passages and measured the frequency and time of fixations on the final words of idioms by both groups of participants. They compared these results to fixations on the same words in non-formulaic contexts.

Underwood et al.'s (2004) findings revealed that fixations on the last words of the expressions were fewer and shorter when these words were part of idioms, which suggests that participants were able to guess these words once they had recognized the expression as an idiomatic one at an earlier point. As predicted, native speakers were significantly more fluent readers than non-native speakers. However, non-native speakers showed similar processing advantages by fixating on the last words of idiomatic expressions fewer times.

In another study that tested the processing advantages of formulaic language for native and proficient non-native speakers, Conklin and Schmitt (2008) used a self-paced line-by-line reading paradigm to compare native and non-native speakers' reading times for frequent and well-known formulaic expressions versus matched non-formulaic expressions. The twenty formulaic expressions that Conklin and Schmitt (2008) selected for the study were predominantly idioms. These expressions were embedded in passages with contexts supporting either their idiomatic or literal interpretation. Twenty control phrases created by rearranging or substituting some of the words in the expressions selected were also included in the task.

Results showed that both native and non-native speakers (both groups comprising students at the University of Nottingham) read the formulaic expressions embedded in contexts that supported either their idiomatic interpretation or their literal interpretation faster than the control phrases. In addition, reading time differences were not found between those for formulaic sequences presented in contexts supporting their figurative interpretation and for those ones when the sequences were embedded in contexts supporting their literal interpretation.

Conklin and Schmitt (2008) concluded that formulaic expressions are processed faster than novel expressions, and that the processing advantages of formulaic sequences hold not only when these are used figuratively, but also when it is their literal interpretation that comes into place. Moreover, these results endorse the notion that not only native speakers, but also proficient second language speakers can utilize the processing advantages of formulaic expressions, regardless if these are interpreted idiomatically or literally. As expected, reading times were longer for non-native speakers than for natives of the language. Nevertheless, this does not imply that proficient non-native speakers do not enjoy processing advantages when using formulaic language, just as native speakers do.

However, although findings of psycholinguistic research support the processing advantages of formulaic language versus creative language for native speakers in all instances, this is not always the case for non-native speakers. Moreover, it has also been claimed that when the formulaic language is idiomatic, i.e., the overall figurative meaning cannot be deduced from the meaning of the individual constituents of the expression, non-native speakers exhibit larger problems in processing it than non-formulaic language (Conklin & Schmitt, 2012).

Using the eye-movement paradigm methodology, Siyanova-Chanturia et al. (2011) performed a study to further investigate the processing advantages of formulaic language for native and non-native speakers. The formulaic items they selected were frequent idioms that had both figurative and literal interpretations (e.g., *at the end of the day*). Matched novel control phrases were also constructed (e.g., *at the end of the war*). All expressions were then embedded in reading passages and presented to participants (native and non-native English speakers, all students at the University of Nottingham) on a monitor screen. Reading times were measured and number of fixations counted. The results revealed that non-native speakers not only took considerably longer to read all passages, but also that they read the passages containing the idioms at a slower pace than the non-formulaic controls, in contrast to native speakers who read the formulaic passages significantly faster than the non-formulaic ones.

As Conklin and Schmitt (2012) point out, research findings are not clear as to whether non-native speakers process idiomatic expressions faster than their literal counterparts. Furthermore, results of some studies suggest that non-native speakers are slower to process the same expressions in a figurative context. In Conklin and Schmitt's (2012, p. 50) opinion, using idioms to investigate the processing of formulaic language poses some problems:

1. Although idioms are salient in the speech community, they exhibit a relatively low frequency as compared with other types of multi-word units (Siyanova-Chanturia & Martinez, 2014). Therefore, non-native speakers' exposure to them is limited, and their sensitivity to frequent co-occurring words cannot be reliably tested.

2. The variability of idiomatic expressions' compositionality degree is such that other kinds of consistently transparent word patterns would constitute better cases to test their formulaic nature as per their recurrence.
3. Idiomatic expressions are ambiguous and their processing may be slowed down by conflicting linguistic decisions as to whether they should be interpreted literally or figuratively. Therefore, research on other types of formulaic strings of words could prove to be more useful for the study of formulaic language processing.

However, for the purposes of this study, the nature of idioms as outlined above does not constitute a hindrance for the empirical research. It is the frequency of the individual constituents of an idiomatic expression, in particular its head-verb (rather than the frequency of the expression as a whole) what is being investigated as a critical factor in its acquisition by native and non-native speakers of a language. Moreover, the relationship between both frequencies will be examined and conclusions will be discussed.

Furthermore, even though the degree of compositionality and the semantic properties of the idioms selected were not variables inspected in the present study, their consideration could provide interesting avenues for further research, e.g., the examination of the links between the frequency of use of the individual components of idiomatic expressions and their semantic properties as part of the expression, etc.

LEXICAL FREQUENCY AND FORMULAIC LANGUAGE

1.6. The Role of Lexical Frequency in Formulaic Language Acquisition, Processing and Use

Language scholars have acknowledged the influence of lexical frequency on language acquisition, processing and use for several decades. According to Jescheniak and Levelt (1994), Oldfield and Wingfield (1965) discovered the effect of word frequency on speech production. Evidence from Oldfield and Wingfield's study using a picture-naming task showed that naming pictures with low-frequency names took longer than naming pictures with high frequency names. Wingfield (1968) later confirmed that this effect did not result from differential speeds of object recognition but to naming itself, recognizing it as a true lexical effect.

Consistent with these findings, the results of Jescheniak and Levelt's (1994) study of word frequency effects on speech production showed a robust word frequency effect on picture naming, with shorter naming latencies for high frequency names than for low frequency names. In addition, Levelt and Wheeldon (1994) found a syllable frequency effect: words ending in a highly frequent syllable were named faster than words ending in a low-frequent syllable. Levelt and Wheeldon's (1994) results also revealed that this syllable frequency effect was independent of and additive to the effect of word frequency on naming times.

Ellis (2002) claims that "language processing is intimately tuned to input frequency" (Nick C. Ellis, 2002, p. 143). Research on first and second language acquisition shows that language users are highly sensitive to frequency effects in language (Nick C. Ellis, 2002; Wolter & Gyllstad, 2013). Ample evidence reveals that lexical frequency is a determining factor in the acquisition of vocabulary: higher

frequency words are usually learned before low frequency words (Schmitt, Schmitt, & Clapham, 2001). Word frequency has also been found to affect language comprehension (Nick C. Ellis, 2002). Therefore, the influence of lexical frequency in language processing and production has become an important factor in language pedagogy.

It is widely agreed that the effects of lexical frequency extend beyond morphologically simple lexical forms (morphemes and single words), and include complex words as well as multi-word expressions (Jansen & Barber, 2012). Ellis (2002) points out that the effects of frequency have been found in the processing of diverse aspects of the language system such as phonology, phonotactics, reading, spelling, lexis, morphosyntax, language comprehension, grammaticality, sentence production, syntax and formulaic language.

Frequency is certainly a salient and determining factor in the identification of formulaic sequences (Wray, 2002). Despite their heterogeneity, what most multi-word expressions have in common is their relatively high input frequency, and, consequently, their familiarity and predictability to the members of a speech community (Siyanova-Chanturia & Martinez, 2014).

Siyanova-Chanturia and Martinez (2014) reviewed a series of psycholinguistic studies on the comprehension and production of multi-word expressions in L1 and L2 speakers (e.g., Sosa and MacFarlane (2002), Arnon and Snider (2010), Tremblay et al. (2011), Siyanova-Chanturia et al. (2011), Bybee and Scheibman (1999), Bell et al. (2003), Jansen and Barber (2012) and Arnon and Priva (2013)), and concluded that notwithstanding the diversity of populations, modalities and methodologies used, and variety of types of multi-word expressions investigated, the evidence provided by the findings of all these studies “strongly suggest that the human brain is highly sensitive

to frequency and predictability information encoded in phrasal units” (Siyanova-Chanturia & Martinez, 2014, p. 10).

However, as Siyanova-Chanturia and Martinez (2014) point out, even though frequency plays an important role in natural language processing, and its effects have been closely examined for single words, psycholinguistic research on the frequency of phrasal expressions is relatively scarce. Some significant studies performed to identify frequent formulaic expressions, and to investigate the role of frequency in formulaic language acquisition, processing and production are outlined next.

Durrant and Schmitt (2009) investigated the extent to which native and non-native writers of English use collocations which have a high frequency of occurrence in the British National Corpus (BNC), to test the theory that adult second language learners neglect formulaic phrases and concentrate instead on learning and using orthographic words. They compared the proportion of collocations used in native texts against the proportion of those found in non-native texts. Four sets of mostly academic texts were examined: 24 long native texts, 24 long non-native texts, 24 short native speaker texts and 24 short non-native texts.

Results revealed that native writers made use of a significantly larger number of infrequent and unattested word combinations than non-native writers, whereas non-native writers used a significantly higher proportion of very high frequency word combinations than native writers. It was also observed among non-native speakers that there is a tendency to repeat favoured combinations, leading to a significant ‘overuse’ in comparison to native norms. In addition, non-native writers used a significantly lower proportion of word combinations that were relatively low frequent but strongly associated (e.g., *densely populated*, *bated breath*, *preconceived notions*),

as determined by association measures of collocational strength¹⁹. Durrant and Schmitt (2009) argue that the underuse of such items, which may be particularly salient to native speakers, may contribute to the general perception that there is “something missing” in second language phraseology. These findings suggest that proficient non-native speakers do acquire and make use of collocations that have been frequent in their input, whereas low frequency collocations take longer to acquire, supporting the significant role of frequency of exposure in the acquisition and use of phrasal vocabulary by non-native speakers.

In a later study, Durrant and Schmitt (2010) investigated how frequency of exposure affected adult second language learners’ retention of collocations, and also found that proficient second language learners are sensitive to phrasal frequency effects. They tested participants’ retention of target word pairs comprised of adjective-noun combinations embedded in sentences. The participants were non-native speakers of English, all postgraduate students at the University of Nottingham at the time of the study, therefore assumed to be reasonably proficient in English. Durrant and Schmitt (2010) used a cued-recall task methodology to see whether the presence of the paired target adjectives facilitated the participant’s recall of the target nouns.

Findings revealed that learners remembered nouns that had co-occurred with paired adjectives during a training session better than nouns that had not. Based on their results, these authors conclude that, contrary to the suggestion that second language learners function more analytically and are not able to process formulaic language as effectively as native speakers (N. C. Ellis, 2006; Wray, 2002), “any deficit in learners’ knowledge of collocation is therefore more likely to be the result

¹⁹ “All of these measures work on the principle of comparing the number of times a collocation appears in a corpus with the number of times it would be predicted to appear by chance on the basis of the frequency of its component words” (Durrant & Schmitt, 2009, p. 167).

of insufficient exposure to the language rather than of a fundamentally different approach to learning [from that of native speakers]” (Durrant & Schmitt, 2010, p. 182).

Wolter and Gyllstad (2013) examined the influence of frequency effects on the processing of congruent and incongruent collocations in a second language. The congruency criterion was based on whether the second language (English) collocation had an equivalent configuration and core meaning in the first language (Swedish). An acceptability judgment task was administered to the participants, 27 native English speakers and 25 L1 Swedish learners of English, who had to decide if the word combinations that were presented to them on a computer screen were commonly used in English or not. Response times and error rates were measured.

The main findings indicated that collocational frequency was an important factor for explaining response times regardless of whether the respondents were native speakers or non-native speakers, or whether the items were congruent or incongruent. These results support the notion that usage-based models of language acquisition constitute a useful approach for the understanding of the acquisition mechanisms of L2 collocations.

Arnon and Snider (2010) investigated comprehenders’ sensitivity to the frequency of four-word phrases, and whether frequency along a continuum moving across the entire phrasal frequency range, from lower to higher frequency phrases, predicted reaction times. They used a reaction time methodology to compare processing times for pairs of compositional expressions differing in phrase frequency but matching in substring frequency (e.g., *don’t have to worry* vs. *don’t have to wait*).

Findings of Arnon and Snider’s (2010) research revealed that processing latencies were shorter for higher frequency phrases, and that this effect was not

reducible to the frequency of the lexical components of the string (individual words or substrings). In addition, graded frequency effects were observed across the entire frequency spectrum, with participants responding faster to more frequent four-word phrases all along the frequency band. These results suggest that language users are able to learn and store frequency information about different kinds of linguistic material, including multi-word expressions. Also, according to the authors, their findings “call for processing [language] models that can capture and predict phrase-frequency effects and support accounts where linguistic knowledge consists of patterns of varying sizes and levels of abstraction” (Arnon & Snider, 2010, p. 67).

Siyanova-Chanturia, Conklin, and van Heuven (2011) performed an eye-tracking study to investigate native and proficient non-native English speakers’ sensitivity to phrasal frequency. Participants read sentences comprising 3-word binomial phrases (e.g., *bride and groom*, *alive and well*, *sweet and sour*) and their reversed forms (e.g., *groom and bride*, *well and alive*, etc.) identical in syntax and meaning, but differing in phrasal frequency: 247.3 occurrences (per 100 million words) for binomials, and 27.4 occurrences for the reversed forms, in the British National Corpus (BNC). Two groups of fillers with identical syntactical configuration to that of binomials and reversed forms were also used so that participants would not notice the binomials and their reverse forms.

Results showed that both native speakers and proficient non-native speakers of English processed binomials significantly faster than their lower frequency reversed forms. In addition, the frequencies of the first and second content word of the binomials and reversed forms tested were not found to be significant predictors of reading speed, which suggests that it is the frequency of the entire phrase that is central to faster processing of the binomials over the reversed forms. Moreover, the

fact that lower proficiency non-native English speakers were not sensitive to phrasal frequencies implies that frequency of exposure “determines what is represented in the mental lexicon” (Siyanova-Chanturia & Martinez, 2014, p. 9). Siyanova-Chanturia et al. (2011) concluded that their findings “support the view that each and every occurrence of a linguistic form, a word or a phrase, contributes to its degree of entrenchment in a speaker’s memory” (Siyanova-Chanturia, Conklin, & van Heuven, 2011, p. 782).

The effects of phrasal frequency in language production were investigated by Jansen and Barber (2012). To test the notion that phrasal frequency affects not only the processing of multi-word phrases in a language comprehension context, as supported by a considerable body of evidence, but also in a language production context, they used an elicitation task where 26 native speakers of Spanish produced noun+adjective, noun+noun and determiner+noun+adjective utterances.

The results showed that naming latencies for higher frequency phrases were shorter than for lower frequency ones, and that the frequency of the object name in the phrase did not affect naming latencies. These findings on the sensitivity of speakers to phrasal frequency in language production are consistent with those from research of the effects of lexical frequency in a language comprehension context, and support the notion that the lexical frequency effect is found across different modes of language use. Jansen and Barber (2012) concluded that “the language system is sensitive to the distribution of linguistic information at grain-sizes beyond individual words” (Jansen & Barber, 2012, p. 10).

Another study on the influence of phrasal frequency in language production is that of Arnon and Priva (2013) who examined the effect of multi-word frequency and syntactic constituency on phonetic duration in both elicited and spontaneous speech.

In the phrase-production task they compared the duration of identical three-word sequences contained in a higher or lower frequency phrase with the same syntactic structure (e.g. don't have to worry versus don't have to wait). As predicted, phonetic durations were shorter inside higher frequency phrases, revealing an effect of phrase frequency on phonetic duration. These findings of adult native speakers showing shorter articulation for the same phonetic material comprised in higher frequency phrases replicate those ones obtained for children in Bannard and Matthews' s (2008) language learning research.

To test the effects of phrasal frequency and syntactic constituency on phonetic duration in spontaneous speech, Arnon and Priva (2013) used the Switchboard corpus and the articulation times of same length sequences with different syntactic structure. They found that phonetic duration was shorter when the phonetic material examined was contained in higher frequency sentences irrespective of their syntactic constituency. Arnon and Priva (2013)'s results showed that "phonetic durations are reduced in higher frequency sequences, regardless of constituency: duration is shorter for more frequent sequences within and across syntactic boundaries. The effects are not reducible to the frequency of the individual words or substrings" (Arnon & Priva, 2013, p. 349).

In addition, as Siyanova-Chantura and Martinez (2014) point out, the quantitative differences in the computation of multi-word expressions revealed by formulaic language research, with both native and non-native speakers processing frequent multi-word expressions faster than equivalent novel strings of words, pose important implications not only for theories of language learning, but also for the notion of the nature of linguistic representation. The fact that the effects of frequency are ubiquitous in language and are found in different types of lexical units, supports

the notion proposed in usage-based and exemplar-based approaches to language that “all linguistic material should be represented and processed in a similar way” (Siyanova-Chanturia & Martinez, 2014).

However, as Siyanova-Chanturia (2015) points out, rather than arguing for the holistic storage of frequent lexical sequences, the central tenet should be “the fact that the human processor is highly sensitive to frequency and probability distributions not only at the word but also at the phrase level, and that repeated phrase usage leads to a growing prominence of the whole relative to the parts – the findings that have far-reaching implications for how we notice, learn, process, and use language” (p. 13).

In sum, findings of a considerable amount of research on how lexical frequency affects language acquisition, comprehension and production support the notion that “the [whole] language system is sensitive to the distribution of linguistic information in the language environment” (Jansen & Barber, 2012, p. 1). Consequently, besides word frequency, phrasal frequency has become an important feature of more recent theories of language acquisition. Along these lines, one of the critical hypotheses of this study is to investigate if the frequency of usage of the head-verbs comprised in verb plus complement idiomatic expressions is positively correlated with whether or not such expressions are acquired.

AGE AND FORMULAIC LANGUAGE

1.7. The Age-graded Character of Formulaic Language

Research on formulaic language has been prolific in the last few decades, and important findings have uncovered many of its key aspects such as its prevalence in language use. Some scholars claim that the number of formulaic expressions that an ordinary mature English speaker knows add up to several hundreds of thousands (Pawley & Syder, 1983), and that, as noted before, the number of phrasal lexical items stored in the mental lexicon of a typical native speaker is likely to be ten times larger than the single word lexicon (Mel'Cuk, 1995). The fact is that, currently, it is not possible to obtain an accurate approximation of the formulaic component in the speakers' internal dictionary, or in a particular language, and we simply do not yet know how many phrasal items there are to know (Kuiper et al., 2009). However, the ubiquity of phrasal vocabulary in humans' speech has been widely acknowledged and there seems not to be a serious debate on this matter.

Evidence reveals that phrasal vocabulary is not only pervasive in the daily speech of adult native speakers but also plays an important role in the discourse of native speakers from an early age. Therefore, the question is not only about how much, but how and when people learn formulaic language. Although some research has been carried out with the aim of answering these questions, the processes by which speakers originally acquire formulaic language have not yet been fully explained (Kuiper et al., 2009). However, a generally accepted developmental model has been proposed to describe the different phases that native speakers go through in dealing with language, either formulaic or analytic, since childhood (Wray, 2002; Wray & Perkins, 2000). This model basically describes the interaction of both

strategies during four phases of language development, but emphasizes the increasing and prominent nature of formulaic language towards late adolescence, and then adulthood, when its patterns are established. Thus, formulaic language is present in the speech of speakers from infancy, but the amount of phrasal vocabulary that speakers store in their mental lexicon increases significantly with age.

On the other hand, even though the main trend is that as people get older they know more phrasal lexical items, most likely because of exposure and consequent frequency effects, it is expected that there will be a decline in the retrieval of such expressions by people in senior stages of life, on the grounds of some evidence yielded by research on lexical retrieval of single words in healthy aging (Bowles & Poon, 1985; D. Burke, MacKay, Worthley, & Wade, 1991; A. J. MacKay, Connor, Albert, & Obler, 2002; Nicholas, Obler, Albert, & Goodglass, 1985; Ramsay, Nicholas, Au, Obler, & Albert, 1999), which reveals that there is an age-related decline in performance on confrontation-naming tasks.

This evidence might appear to be paradoxical in the face of other findings that show that healthy older adults' (> 70 years) performance in lexical decision experiments where the task is to decide if a letter string is a word or not, has been found to be no different to that of younger people (Bowles & Poon, 1985). Furthermore, older people consistently achieve higher scores in standard vocabulary tests than younger adults, which suggests that adults keep on learning new word meanings throughout life, and that they are able to access those meanings up to older ages (Bowles & Poon, 1985; Nicholas et al., 1985). Indeed, it has been proposed that in relation to other neuropsychological skills, language skills change little with age, with lexical comprehension skills not changing at all with healthy aging (Nicholas et al., 1985). "The stability of vocabulary measures with age indicates that the encoding

of information is intact in the semantic network and in the lexical network and that there is a connection between the two” (Bowles & Poon, 1985, p. 76). Then, what is the reason why healthy older people, say in the 60s and 70+ age groups, perform less well on naming tasks than younger people?

Ramsay et al.’s (1999) findings showed that despite the significant differences between the performance of both age groups in uncued confrontation-naming tasks²⁰, both elderly and young individuals’ performance was analogous, and all participants were able to correctly name pictured items and actions when given a phonemic cue. Parallel results were found by Nicholas et al. (1985) with elderly participants being as prompt to produce the correct word as younger participants in the presence of a phonemic cue. According to Burke et al. (1991) who carried out an investigation on the tip of the tongue (TOT) phenomenon, “TOTs are caused by deficits in the transmission of priming that occur when the connections between lexical and phonological nodes become weakened due to infrequent use, non-recent use, and aging” (D. Burke et al., 1991, p. 569).

On these bases, it has been proposed that even though healthy speakers keep an intact lexicon up to advanced ages, they have lexical retrieval problems as they get older because there is a breakdown within the speech production network that interferes with the transmission of activation from lexical to phonological nodes (D. Burke et al., 1991; A. J. MacKay et al., 2002; Ramsay et al., 1999). Lexical retrieval, thus, slows down with aging. Therefore, it is expected that phrasal vocabulary retrieval for some elderly people, e.g., over 65 years of age, will be less active than for younger people, and, in addition, that this waning process will more likely involve less frequent expressions, and expressions with less frequent head-verbs.

²⁰ Two widely used instruments to investigate speakers’ lexical retrieval ability in confrontation-naming tasks are the Boston Naming Test (BNT) (Kaplan, Goodglass, & Weintraub, 1976) for nouns, and the Action Naming Test (ANT) (Obler & Albert, 1979) for verbs.

Kuiper et al. (2009) explored the association of age with the mastery of formulaic sequences for native speakers of English, and, as predicted, their results showed that there is an important effect of age, as older people scored higher than younger people in the cloze test. In addition, they found a decline in the number of correct answers for the participants over 65 years of age.

Escaip's (2008) study replicating that of Kuiper et al.'s (2009), with the variant that the participants were native speakers of Spanish, yielded similar results that supported most of the latter's outcomes: as expected, a significant correlation was found between the total score of the cloze test and the age of the participants, given that the number of correct answers increased considerably with age. Thus, the findings revealed that older people knew significantly more phrasal vocabulary items than younger people. However, the prediction that there might be a decline for older people was not supported. A possible explanation for this result was concluded to be the size of the sample of people aged over 65 years, which was relatively small in proportion to the total sample of participants (five participants out of 55 native Spanish speakers, i.e., 9% of the total sample, in contrast to 10 participants over 65 years of age out of 40 native English speakers in Kuiper et al.'s (2009) study, i.e., 25 % of the total sample), hence, not properly representing the elderly population and generating a statistical problem of power that might have accounted for this result.

The present study further explores the age-graded character of formulaic language, by administering the instruments previously elaborated for the English and Spanish languages in the investigations mentioned above to new participants, and by extending the results to the French language through the application of a newly created cloze test for such language. The results are presented and discussed in the corresponding section of the Discussion chapter.

Additionally, since the understanding of some theories of lexical access and speech production is central to making sense of how respondents in the research reported in this study are able (or not) to complete cloze tests, an overview of some of the most influential ones is presented in the following section that deals with the methodological foundations of this investigation.

METHODOLOGICAL FOUNDATIONS

1.8. Lexical Access and Speech Production

“We are born talkers.”

(Levelt, 1999)

1.8.1. Expressing our thoughts

What is the process by which speakers retrieve the meaning and the sounds of the words they want to say? In other words, how do speakers manage to express their thoughts by producing spoken words? In the search for a comprehensive answer to this relevant and fascinating question, the mechanisms of lexical access and speech production have been the subject of systematic, thorough and extensive investigation in academic disciplines such as linguistics, psychology and pedagogy for the last five decades, although some meaningful studies on the mechanisms of language production date even further back, to the end of the nineteenth century (Meringer & Mayer, 1895).

Word production is one of human's most complex psychomotor skills. In normal fluent discourse speakers effortlessly generate two to three words per second, which is equivalent to about four syllables and ten or twelve phonemes per second. These words are constantly retrieved from the speaker's mental lexicon, a colossal repository which is assumed to be comprised by tens of thousands of lexical items. In Levelt's words, “a speaker's mental lexicon is a repository of declarative knowledge about the words of his language” (1989, p. 182). Estimates indicate that the mental lexicon of a normal, literate adult person is comprised by at least 50-100 thousand words (Levelt, Roelofs, & Meyer, 1999). Thus, in the process of speech production,

speakers continuously have to select the right word from this massive collection of words.

Despite being a high-speed process, word production is an extraordinarily precise activity showing a very low rate of error with an average of no more than one or two mistakes per one thousand words. Some scholars affirm that word production is the skill humans exercise the most: in about 40 minutes of daily spoken speech a person will have produced around 50 million words by the time adulthood is reached (Levelt, 1999; Levelt et al., 1999).

Speech production may be regarded as a simple pattern association: “A pattern of activation corresponding to the meaning of a word needs to be mapped onto a pattern corresponding to the word’s sounds” (Dell, Chang, & Griffin, 1999, p. 519). “Talking is mapping discrete linguistic representations onto pronounceable and continuous phonetic programs” (Levelt, 1992, p. 10). However, regardless of the apparent simplicity implied in this clear-cut definition, the process through which a speaker produces an utterance going from a thought or communicative intention to a decision about what information to express, i.e., the message, is rather complex and fascinating.

Levelt et al. (1999) pointed out that speech generation in humans is originally the result of the connection, as observed during early childhood, of two initially independent systems: a conceptual system and an articulatory motor system. Both systems are manifested in a variety of manners after the child is born, but real speech production starts when the infant is able to link particular sounds to particular lexical concepts. In keeping with the authors, the duality of these two systems will always be maintained throughout the development and maturation process of the speech generation system in every human.

According to Levelt et al. (1999), at the very beginning in the course of creating multi-word sentences, semantics will command the word order in line with the importance of the relationships among the different lexical concepts. Later in childhood, after the age of 2, the child starts using syntax, a genetic endowment, to deal with more complicated semantic structures and express the corresponding lexical concepts. By the age of 4 years the child has already developed a system of lemmas, i.e., packages of syntactic information for the different lexical concepts. From then on, the child will be able to select the appropriate lemma when producing a word.

Therefore, the original dual system matures into a four-stage process for speakers where the production of a word involves going from the lexical concept to the selection of its lemma, and then turning to the phonological code of the word before using it to compute the corresponding phonetic articulatory gesture. Nevertheless, the dichotomy of the initial speech production system between the lexical concept and the word form will be evident in language phenomena such as the tip-of-the-tongue (TOT) state, which consists of the momentary inability of retrieving the word that corresponds to a particular lexical concept (Caramazza, 1997; Dell et al., 1999; Miozzo & Caramazza, 1997).

Language scholars widely agree on the distinction between these two levels of lexical representation: the lemma and lexeme levels of representation. Vast and compelling evidence supports the existence a dual-stage model of lexical access which assumes that a word's syntactic features (lemma level) are represented independently of its phonological form (lexeme level), therefore allowing the independent access to these levels of representation (Bock & Levelt, 1994; Butterworth, 1989; Caramazza, 1997; Dell, 1986; Levelt, 1989).

In the first stage of this two-stage model of lexical access, i.e., the lemma level, a semantically and syntactically specified representation is retrieved, whereas during the second stage, the lexeme level, speakers retrieve a phonological and orthographic specified representation of the word.

The distinction between lemma and lexeme levels of representation offers, for instance, a sensible explanation for the existence of homonyms, which are words with identical phonological and orthographical properties, but with a different meaning and/or grammatical category. Thereby, the main difference between these words does not reside in the lexeme level of representation, but in the semantic and syntactic level of representation (Caramazza, 1997).

Thus, lexical access is assumed to involve two major steps: lemma retrieval and word-form encoding (Butterworth, 1989; Dell, 1986; Kempen & Hoenkamp, 1987; Levelt, 1989; Roelofs, 1992).

1.8.2. Research traditions on lexical access and speech production

According to Levelt (1999), the systematic study of speech production started in the late 1960's when psycholinguistics adopted two parallel but originally independent research methods: the collection and analysis of corpora comprised by spontaneous speech errors, and the chronometric approach to word production. However, notwithstanding the difference of these two perspectives on word production, there has been a general agreement on the nature of the processes to be modelled and investigated. Models of both traditions share the same main levels of representation: conceptual/semantic, syntactic, phonological and phonetic.

1.8.2.1. The speech error tradition

Word errors have a long tradition of being an important source for the study not only of the mechanisms of language production (Bock & Levelt, 1994; Boomer & Laver, 1968; Cutler, 1982; Fromkin, 1973; Levelt, 1989; D. G. MacKay, 1970; Meringer & Mayer, 1895), but also for the investigation of a variety of language issues, such as the evolution of language in history (Sturtevant, 1917, 1947), the relationship between linguistic competence and performance (Fromkin, 1968), the nature of phonological units and their rules (Green, 1969), and the psychological reality of phonological representations of a language (Welsh) (Meara & Ellis, 1982). Moreover, some intellectuals like Sigmund Freud have examined speech-error data for the understanding of psychological issues. However, as cited by Fromkin (1973, p. 215), Freud, in his book *Psychopathology of everyday life* (1901, 1938), while dealing with the relation between speech errors and psychological problems, also questioned “whether the mechanisms of this [speech] disturbance cannot also suggest the probable laws of the formation of speech.”

Results from studies on speech errors of slips of the tongue naturally occurring and experimentally induced (Dell, 1990), reaction time in picture naming and lexical decision (Jescheniak & Levelt, 1994; Levelt et al., 1991) and tip-of-the-tongue (TOT) phenomenon (R. Brown & McNeill, 1966; D. Burke et al., 1991; Perfect & Hanley, 1992) support the lemma/lexeme distinction. In addition, results from aphasia studies showing that word production disorders may be the consequence of shortfalls clearly found at the semantic level, or at the phonological level, also support the two-stage model of lexical representation (Dell, Schwartz, Martin, Saffran, & Gagnon, 1997; Hillis, Rapp, Romani, & Caramazza, 1990).

A slip of the tongue or speech error has been described as “an unintentional linguistic innovation” (Sturtevant, 1947, p. 38); “an involuntary deviation in performance from the speaker’s current phonological, grammatical or lexical intention” (Boomer & Laver, 1968, in Fromkin, 1973, p. 217). Dell’s definition seems to be more comprehensive by defining this phenomenon not only as ‘unintended’ but as ‘nonhabitual deviation from a speech plan’ therefore excluding from consideration word errors such as “nonstandard expressions (*between you and I*), classical malapropisms (consistently saying *reminisce* for *remiss*), and errors that arise from pathology” (1986, p. 284).

All word errors are the result of failures of lemma access, but the mechanisms involved are different. Levelt (1989) distinguishes between two major causes of speech errors: ‘conceptual intrusion’ and ‘associative intrusion’. In the first case, the lemma selection is disturbed when two or more concepts are activated simultaneously, and in the second one, the disruption in the word access is the result of the association between lemmas.

A number of language scholars have conducted experimental research with healthy and brain-damaged individuals on a variety of errors produced during speech production. Keeping in mind that it is important to distinguish between the cause of a speech error’s occurrence and the mechanism by which it occurs (Cutler, 1982), the study of speech errors offers compelling and empirical evidence for the existence of at least two levels of lexical representation in language production, the lemma and lexeme levels of representation, besides providing good bases for the understanding of the language generation processes, among all the other matters mentioned above.

Types of speech errors. According to Levelt et al. (Bock & Levelt, 1994; Levelt, 1989), there are three main kinds of lexical errors: substitutions, blends, and exchanges. They all have in common the activation of a non-target lemma and the subsequent production of the incorrect word form. However, the mistaken activation involves different processes in each case:

1. Substitution errors. In substitution errors a mistaken word replaces / substitutes for the target word. Word association (associative intrusion) is considered to be the main (but not the only) source of substitution errors. This kind of lexical error may be the result of a variety of causes:

- a) Substitution errors of lexical selection may be the result of the simultaneous activation of semantically related words to the target word at the conceptual network level, resulting in the accidental production of the wrong lexical item:
“... *carrying a bag of cherries. I mean grapes.*”²¹
- b) Substitution errors may also involve the mix-up of antonyms, words that represent semantic oppositions but are strongly associated, such as *high* and *low*: “*He’s a high-low grader.*” However, it is unclear at what level of the network model the association between this type of words is represented. It has been suggested that it may be a special type of conceptual relationship, or it may as well involve direct lemma-to-lemma connections.
- c) Other substitution errors may be caused by environmental contamination, such as the sight of certain words at the moment of speech production: “*Get out of the clark [intended: car]*” was uttered because the speaker happened to see the word *Clark’s* printed on a storefront when talking. In this case, there is no

²¹ All lexical errors’ specific examples in this section were taken from Bock and Levelt, 1994, pp. 954-956.

conceptual spreading activation from *car* to *Clark*, but a priming effect where the word *Clark* activated the analogous lemma.

- d) In other cases, substitution errors appear to be the result of the activation of strong associates to other words in the sentence, giving place to the selection of an incorrect lemma. In the utterance “*A branch falling on the tree [intended: roof]*” the speaker may have selected the lemma *tree* instead of the target lemma *roof* because of the strong association between *branch* and *tree*. As in the case of antonyms, it is undecided if this error originates at the conceptual level (from *branch* to *tree*), at the lemma level (from *roof* to *tree*), or both.
- e) Lexical selection errors where a word is substituted by a sound-related unintended word are not explained by priming at either conceptual or lemma levels, e.g., *He’s the kind of soldier a man [...] wants to emanate [intended: emulate]*. This type of slip of the tongue is not considered as a lexical selection error as such since there is not activation of the unintended lemma, hence shows no semantic association with the target word. These speech errors have been denominated ‘malapropisms’ and are supposed to emerge during phonological processing at lexeme level (Fay & Cutler, 1977).
- f) Finally, mixed errors in speech production are those ones that have both a semantic and a phonological relation. In the sentence *I urgently request you to release the hostages unarmed –unharmed*, the target word *unharmed* and the unintended word *unarmed* are connected semantically and phonologically. This kind of speech error is controversial since their occurrence is higher than would be expected if the distinction between the lemma and lexeme levels

does exist indeed, and semantic and phonological errors have different sources (Dell & Reich, 1981).

However, this fact has been explained through the hypothesis that resemblance at lexeme (phonological) level increases the chances of a semantic substitution (Dell & Reich, 1981; Harley, 1984). Also, in interactive models of speech production (Dell, 1986) this has been dealt with assuming that there is feedback running from the lexeme level to higher levels, rather than the incidence of the purely top-down flowing activation, i.e., from higher levels to lower levels, that discrete models of speech production have postulated.

2. Blend errors. A word blend consists of two words that are fused into one. There are two types of blend errors in lexical selection. The first type involves the fusion of two words of similar meaning, i.e., near-synonyms (conceptual intrusion). Thus, two different lemmas competing for the same syntactic slot are retrieved: *The competition is a little stougher [stiffer / tougher]*. The second type of blend errors involves the blending of two different utterances: *The sky is shining [The sky is blue / The sun is shining]*. Their source is believed to be located at the conceptual level, earlier than the source of substitution errors, and their late phonological merging is the result of the parallel encoding of two related concepts.

3. Exchange errors. It has been observed that word exchanges typically happen between words of the same form class, since the insertion of the wrong words is only possible in slots that take lexical items of the same syntactic category as the target words. Examples of these errors are the following sentences: *Seymour sliced the knife*

with a salami; I got into this guy with a discussion; ...a hole full of floors; ...threw the window through the clock. Exchange errors may fall into one of two categories: word exchanges as in the case of the first and third example above, and whole phrase exchanges, as in the second and fourth example. These exchange errors may have different origin depending on what kind of exchange they consist of. Yet, it may be difficult at times to distinguish whether the exchange is lexical or phrasal. Still, unambiguous word exchanges (e.g. *takes plant in the place*) are more likely to display sound similarities and less likely to show meaning similarities than phrase exchanges (e.g., *used the door to open the key*) (Bock & Levelt, 1994; Fromkin, 1973).

Tip-of-the-tongue (TOT). Within this research tradition it may be also included the study of the tip-of-the-tongue (TOT) phenomenon, which is also considered as a strong evidence supporting the lemma/lexeme distinction: the speaker knows that the appropriate word exists, but is not able to access its sounds, which implies that the lemma selection process has been successful, but the phonological encoding process has not (Caramazza, 1997; Dell et al., 1999; Miozzo & Caramazza, 1997). Bock and Levelt (1994, p. 953) quote the description of the TOT phenomenon that William James offered back in 1890:

Suppose we try to recall a forgotten name. The state of our consciousness is peculiar. There is a gap therein: but no mere gap. It is a gap that is intensely active. A sort of wraith of the name is in it, beckoning us in a given direction, making us at moments tingle with the sense of our closeness, and then letting us sink back without the longed-for term. If wrong names are proposed to us, this singularly definite gap acts immediately so as to negate them. They do not fit into its mould. And the gap of one word does not feel like the gap of another, all empty of content as both might seem

necessarily to be when described as gaps... The rhythm of a lost word may be there without a sound to clothe it; or the evanescent sense of something which is the initial vowel or consonant may mock us fitfully, without growing more distinct (James, 1950, pp. 251-252).

Speakers experiencing the TOT phenomenon know the meaning to be expressed and the syntactic properties of the word, but they have difficulties in retrieving the word form, even though they may have access to some of its phonological features. Speakers with a word on the ‘tip of their tongue’ frequently have a feeling of what the beginning or the end of the word is like, and these intuitions are right more often than their feelings about the middle part of the word. On this basis, it has been hypothesized that the memory processes involved in the storage of words in the mental lexicon ascribe more weight to the two extremes of words, and probably even more to the initial segments (Cutler, 1982). Therefore, the TOT phenomenon seems to imply problems of lexeme activation and not problems of lexical selection.

1.8.2.2. The chronometric tradition

Levelt (1999) affirms that the chronometric approach to the study of speech production, involving procedures such as measuring naming latencies, naming objects, and naming words, started in 1885 with Cattell (1885) who found out that naming a list of 100 line drawings of objects took almost twice the time of naming a list of the corresponding printed object names. The original attention in this research tradition concentrated on the reason for the difference between naming latencies of drawings and words, which could not be attributed to practice. This difference was explained by claiming that naming latencies of words are shorter due to the existence of a direct

access route from the word to its phonological code, whereas in the case of naming latencies with drawings the naming process involves one additional step –the object concept needs to be activated before this, in turn, activates the corresponding phonological code, which makes this process longer.

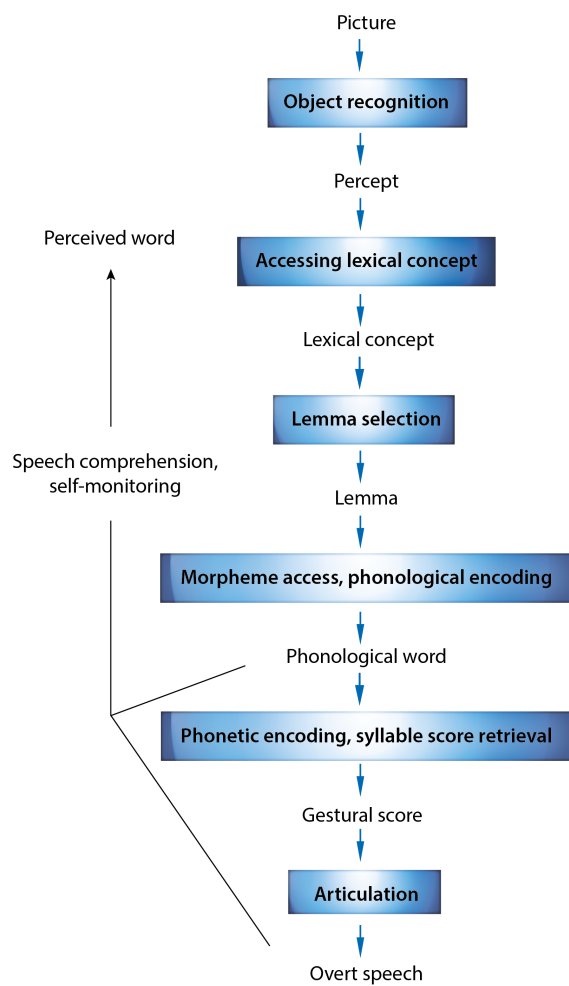
The different stages of a stage model of picture naming have been described by Levelt et al. (Levelt, Praamstra, Meyer, Helenius, & Salmelin, 1998). The visual image of the object activates a visual representation of this object, the *percept*, which is completely ‘alinguistic’ but implies such abstract characteristics as the object’s colour and size. The percept then activates the appropriate lexical concept, which in turn activates the lemma, i.e., the syntactic representation of the corresponding word in the mental lexicon. Only one lemma will be selected before spreading its activation to its word phonological shape – the morphemes, and its segments, the phonemes - and thus generating the phonological word, before accessing the mental syllabary and retrieving the syllabic gestural scores. The articulation of the word is initiated once every one of its syllabic gestural scores has been retrieved (See *Figure 1*).

Picture naming studies have also brought to light interesting findings on the effect of word frequency. It has been found that there is a strong and robust effect of word frequency in speech production. The findings of a study using a processing model based on extensive naming latency studies, showed that participants, in conceptually controlled conditions, were faster in producing high-frequency words than low frequency ones (Levelt et al., 1998).

A very interesting research paradigm within this tradition is the Stroop task, introduced by Stroop (1935). The stimuli are differently coloured words and the participant’s task is either say the word or name the colour. Results consistently show

that naming the word is not affected by the colour of the word, but colour naming is significantly slowed down if the colour word is a different colour name.

Figure 1



“A stage model of picture naming. Preparing a name proceeds through stages of visual processing, activating a lexical concept, word selection, phonological encoding, phonetic encoding, and the initiation of articulation. Self-monitoring refers to phonological codes and overt speech” (Levelt et al., 1998, p. 555).

Another example of research inside the chronometric tradition are Lupker (1979)'s studies on the nature of semantic interference effect in picture/word interference. The main finding was that the interference is strongest if there is a semantic association and the distracter word is a possible response to the picture. It was also found that when the distracter word rhymes with the target word, the interference decreases significantly and there is phonological facilitation instead of semantic inhibition (Lupker, 1982).

1.8.3. Models of language production

All theories of lexical access and speech production concur in the idea that semantic, syntactic and lexical form information constitute independent levels of representation, and that these levels of representation are most probably accessed in a sequential manner during the process of speech production (Caramazza, 1997; Semenza, Mondini, & Capelletti, 1997). A stage model of lexical access where individuals firstly need to identify the meaning of the word they want to say and retrieve the appropriate word as a syntactic-semantic unit, and then find its correct phonological form, seems to be widely accepted by researchers in lexicalization (Dell, 1986; Dell & O'Seaghdha, 1991; Dell & O'Seaghdha, 1992; Levelt, 1993; Levelt et al., 1991).

Thus, the prevailing opinion is that speech production comprises three types of mental processes: conceptualization (specification of concepts to be expressed verbally), formulation (building of syntactic and sound structures), and articulation (overt speech) (Roelofs, 1992). In other words, the process of speech production, that is, the mapping process from meaning to sound, comprises at least three different

stages: the conceptual level, the lemma level and the lexeme or sound level (Bock & Levelt, 1994; Dell et al., 1999):

- a) In the first stage, the conceptual level, the semantic representation of the idea to be expressed is selected.
- b) In the second stage, the lemma level, the appropriate lexical representation or lemma is selected from the mental lexicon. It is frequently assumed that the lemma selection entails its association with the grammatical features of the word, its syntactic kind and other characteristics such as gender and number.
- c) The last stage, phonological encoding or lexeme (sound) level, involves the selection of the corresponding lexical-phonological representation or lexeme. In other words, the lemma is transformed 'into an organized sequence of speech sounds'.

As for lexical access, a major part of the speech production process, all models proposed by language researchers of word production propose the distinction between two main levels of lexical representation: a lemma level and a lexeme level. Vast amounts of research, including examination of speech-error data support this distinction, concluding that there is in fact a rift between the syntactic and phonological levels of representation in speech production.

Thus, the lexical access process entails the mapping between a mental representation and the corresponding phonological form. In the first stage known as lemma access the mapping occurs between the conceptual representation and a lemma, which is an abstract symbol that represents the chosen word as a semantic-syntactic entity. In the second stage, phonological access takes place rendering the selected

lemma a phonological form (Dell & O'Seaghdha, 1992). It is also known that pragmatic, semantic, syntactic and phonological information play an important role to achieve this mapping.

However, there are a number of disagreements in the particularity of these phases of lexical access, from the nature and form of the information in each level of representation, to the manner by which representations are selected, including the time-course of the process of speech production. Whether these stages in lexical access are independent or interactive has been the subject of numerous debates.

Some theories of lexical access state that these fundamental stages are discrete, and propose modular models of lexical access and speech production. These models assume that the lemma selection stage is accomplished before the stage of phonological encoding is activated. Likewise, there is no activity of semantic consultation during the phonological information phase (Levelt, 1989; Roelofs, 1997).

In contrast, results from other studies show that the stage of phonological encoding may begin before the lemma selection process is finalised (Cutting & Ferreira, 1999). This evidence supports the interactive view of language production. The simultaneous activation of both stages of lemma selection and phonological encoding can be inferred by the occurrence of speech errors such as “Hungarian restaurant’ for “Hungarian rhapsody”, or “snake” for “snail” (Dell et al., 1999, p. 520).

In their investigation of the time-course of lexical access, Dell & O'Seaghdha (1992) posed what they called the *discreteness question*. The discreteness question resides in whether semantic information is kept apart from phonological information. Discrete stage models propose that semantic information is accessed and used at an earlier stage of lexical access than phonological information. Models such as those from Butterworth (1989) and Levelt et al. (1991) are based on the modular two-steps

hypothesis that conceptualizes lemma and phonological access as two non-overlapping stages acting on different inputs. Semantic activation only occurs during the lemma access stage, while phonological activation just takes place during the phonological access stage.

In contrast, non-discrete spreading activation models position the lexical activation process in an interactive framework which allows for continuous interactions between both the semantic and the phonological levels, acknowledging the predominant semantic and phonological activation during lemma and phonological access respectively (Dell, 1986; Dell & O'Seaghdha, 1992; Harley, 1984).

Lexical access and speech production is a fascinating process and poses a number of complex questions. The contrast between modular, or discrete, and interactive theories of language production has been a recent and important focus of interest in the scene of psycholinguistic research.

1.8.3.1. Discrete theories of lexical access

As has been mentioned, the process of lexical access in speech production involves, firstly, the selection of a suitable lexical item (lemma) from the mental lexical repertoire (mental lexicon); and, secondly, the phonological encoding of that lemma.

Modular theories of lexical access yield models where two discrete and non-overlapping stages comprise the lexical access process: 1) The selection of a lemma from a variety of abstract lexical candidates compelled by a semantic representation; and 2) The access to a comprehensive phonological form, or lexeme, driven by the selected lemma. In other words, the selected lemma transitions to the corresponding

word's phonological form. In these models, the phonological activation begins only when the selection of the suitable lexical candidate has been completed (Levelt et al., 1991).

Levelt's modular model of speech production constitutes one of the most influential theories on lexical access. Levelt originally proposed a three-stage model of language production: 1) The conceptual stage where a semantic representation of the utterance, the lemma, is formed; 2) The linguistic encoding stage where this semantic representation turns into a sentence or sentences. It involves syntactic and phonological encoding; and, 3) The articulatory stage where 'overt' speech is produced (Levelt, 1989).

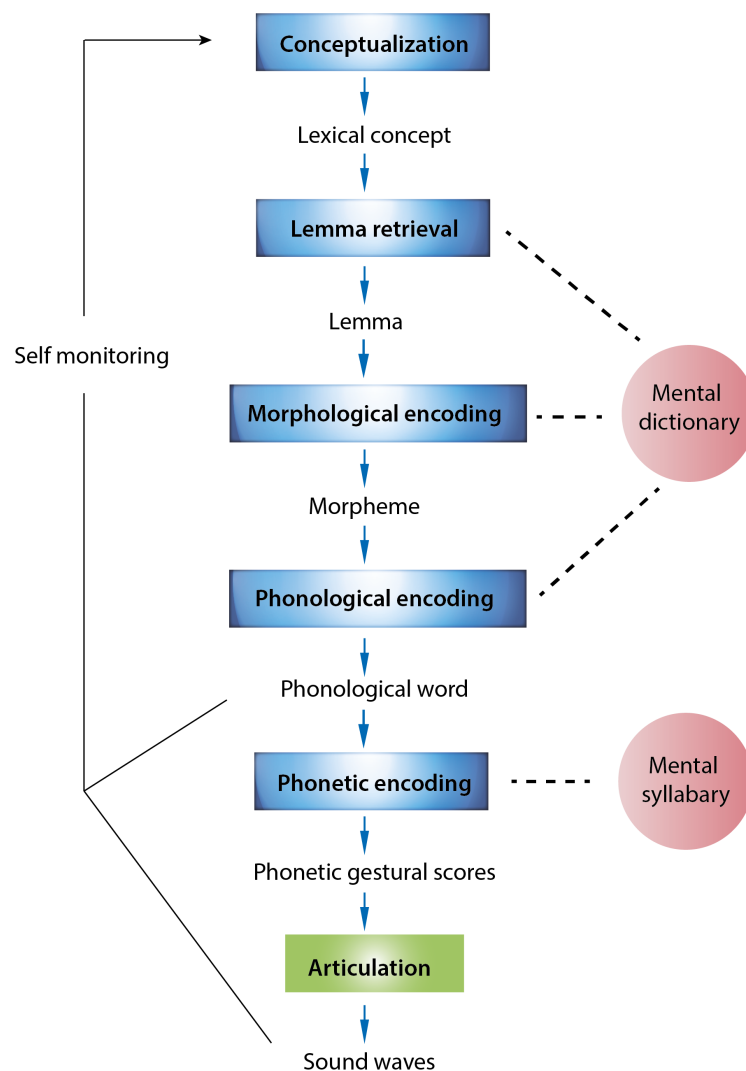
However, he later described a more comprehensive speech generation model identifying the following stages: (1) Conceptual preparation; (2) Lexical selection; (3) Phonological encoding; (4) Phonetic encoding and articulation (Levelt, 1996; Levelt et al., 1999). Levelt's multi-stage theory of speech production (See *Figure 2*), probably the most influential theory of language production, entails, thus, four main levels of processing (Bock & Levelt, 1994; Levelt, 1989; Levelt et al., 1999):

1) Conceptual Preparation. During the first stage, conceptual preparation, the speaker goes from the intended meaning to be expressed to a conceptual structure comprised by lexical concepts, which will be eventually communicated in the last phase of the speech production process.

The activation of a lexical concept in the intentional production of a meaningful word is not a straightforward process. There are always pragmatic and context-dependent considerations that mediate the transition between the idea to be expressed and the suitable lexical concept to be selected, due to the variety of mental

representations connected to the intended meaning. Auditory and visual word input are also other sources in the activation of lexical concepts, as it has been observed in various Levelt et al.,’s object naming studies (Levelt, 1992; Levelt et al., 1998; Levelt et al., 1991).

Figure 2



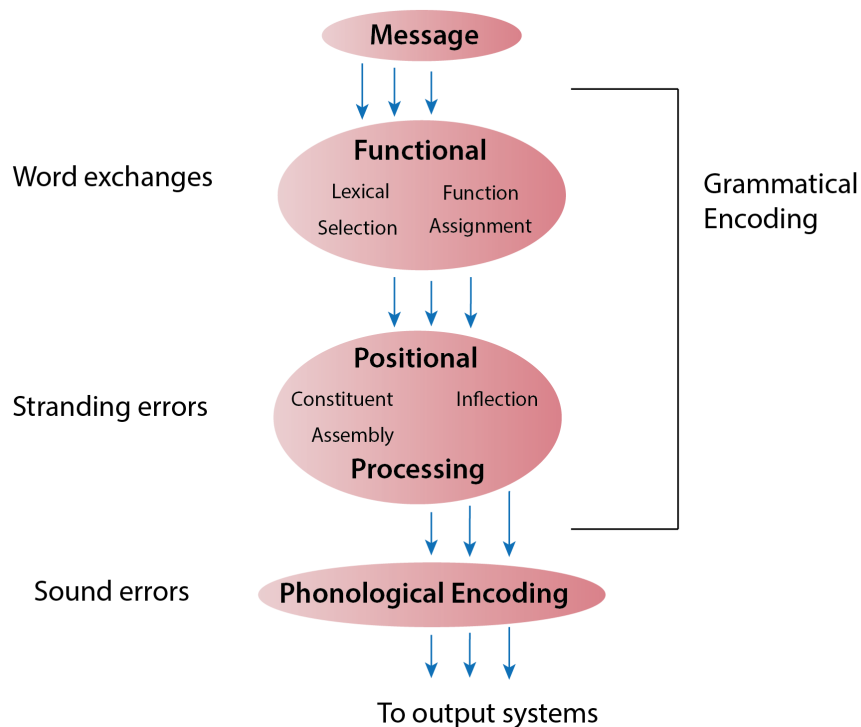
“The theory in outline. Preparing a word proceeds through stages of conceptual preparation, lexical selection, morphological and phonological encoding [these two stages represented in separate boxes in this model but considered to belong to the same level], and phonetic encoding, before articulation can be initiated. In parallel, there occurs output monitoring involving the speaker’s normal speech comprehension mechanism” (Levelt et al., 1999, p. 3).

2) Lexical Selection. Once a lexical concept spreads the corresponding information to the lemmas in the mental lexicon, a semantically and syntactically suitable word is retrieved from the tens of thousands lexical items stored there. In other words, retrieval of the lexical concept holding suitable semantic information triggers the activation of the lexical selection stage, where the appropriate lemma, i.e., the syntactic representation of the word, is selected from the speaker's mental lexical repertoire.

As mentioned before, this process is high-speed with a retrieval rate of two to three words per second from the mental lexicon, which is comprised by tens of thousands of lexical items. This retrieval process is also remarkably precise with a lexical selection error ratio of no more than one or two per one thousand range (Levelt, 1999; Levelt et al., 1999).

The lemmas selected during this stage already contain some grammatical information pertinent to the lexical concepts involved in the message to be uttered, such as their form class (e.g., noun, verb, adjective, adverb, preposition, etc.). However, during this stage they undergo a further syntactization process acquiring grammatical functions (e.g., subject-nominative, object-dative, etc.) and positional traits that determine the order of the elements in the utterance – functional and positional processing respectively. Functional processing consists, thus, on the activation of a set of lemmas and a set of syntactic functions, associated through the argument structures of the lemmas, and positional processing controls the placement of the different lexical items comprised in the utterance (Bock & Levelt, 1994) (See *Figure 3*).

Figure 3



“An overview of language production processes. Bock and Levelt Grammatical Encoding Model. Under this model, language production is incremental (Levelt, 1989). This means that the processing work in higher levels does not need to be completed before the processing work in lower levels starts. The arrows connecting the different levels represent hypothetical temporal connections between the processing levels” (Bock & Levelt, 1994, p. 946).

3) Morpho-phonological Encoding and Syllabification. The selected lexical item must eventually be given phonetic shape. Thus, in this stage, once the appropriate syntactic word or lemma has been selected, the morphological and phonological encoding of the word takes place. In this phase of the process the speaker retrieves the lexeme, i.e., the word’s phonological shape and properties from the mental lexicon. In other words, the speaker retrieves the word’s sound form by accessing its segmental features and its metrical representation, which captures the word’s syllable structure and stress pattern (Levelt et al., 1999).

Levelt (1992) affirms that the word's phonetic shape is not a 'ready-made template' that can be accessed and retrieved as a whole. Based on speech error research findings he claims that a word's final form has to be 'constructed' time and again.

Once the word's phonological properties have been retrieved, and the (rapid) syllabification of the word in context has been achieved, it starts the next phase where the appropriate articulatory gestures for the selected word in its prosodic context will be computed.

4) Phonetic Encoding. In phonetic encoding and articulation, the fourth and last stage, an articulatory gesture is prepared for each phonological syllable available. The articulation of the word(s) will occur as soon as the preparation of the syllabic gestures has been achieved and the syllabic scores have been retrieved.

Levelt et al. (1999) admit that their theory only provides a partial account of the phonetic encoding phase. This account entails the notion of a syllabary constituted by the frequently used syllables of the language to which the speaker has direct access. Direct access to highly overlearned gestural patterns, ready-made in the speaker's mental syllabary, would be functionally beneficial for the speaker who would not have to recompute these phonetic patterns over and over again. According to the authors, adult speakers of English will still be able to produce new syllables in occasions such as when reading aloud a new word or a non-word. However, these occasions should be acknowledged as truly infrequent.

In Levelt's multi-stage theory of speech production, the speaker self-monitors throughout the whole process, from the phase of conceptual preparation through to the acoustic output, and makes self-corrections when needed (Levelt, 1996; Levelt et al., 1999; Meyer & Wheeldon, 2006).

The different stages outlined above and depicted in *Figure 2* are comprised, nonetheless, of a two-step model of lexical access, steps 1 and 2 corresponding to the lemma access level, and steps 3 and 4 corresponding to the lexeme access level. Levelt et al. (1991)'s study findings support the notion that the major rift in lexical access is between the lemma and the lexeme levels of processing, and that spreading activation goes from the higher levels to the lower ones. Under this modular model, phonological encoding rigorously follows lexical selection, and no feedback is allowed from the lexeme to the lemma level. It has also been stated that merely active lemmas do not spread any activation to the lexeme level, but that spreading activation from the lemma to lower levels only happens after a lemma has been selected. These claims are justified by the assumption that lexical selection and phonological encoding are two dramatically different processes, and interaction between the two could result in disruptions in both levels.

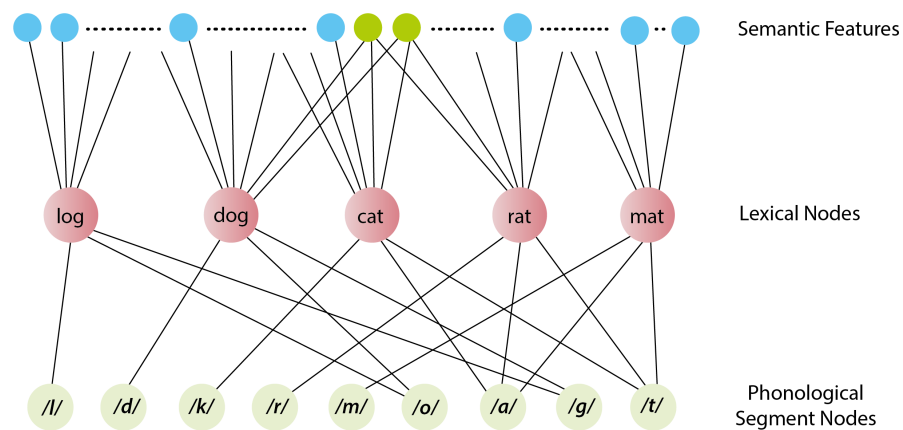
Since lexical access is an extremely fast and precise process, it has been claimed that it is this modular quality a 'nature's protection against error' (Bock & Levelt, 1994). However, as shown in *Figure 3*, this model gives room for an incremental quality of language production, which suggests that, once a lemma is selected, the processing functions need not be concluded before the work in the next level begins.

1.8.3.2. Interactive spreading-activation theories of lexical access

Connectionist or spreading-activation models, like discrete models, account for the existence of two different phases in the process of lexical access, i.e., lemma access and phonological access. However, unlike discrete models of lexical access, interactive models allow for a bidirectional spread of activation among the different

units in the network (See *Figure 4*). These units, semantic, lemma or word, and phonological units, are organized in a network where the activation goes not only from the top to the bottom but also bottom-up. This means that an activated lemma or word will tend to activate the phonological units in the bottom level as well as semantic units at the top level. These models can explain interactive effects in speech error data, in contrast with the modular two-stage models that cannot accommodate such data (Harley, 1993).

Figure 4



“Lexical network structure in the spreading-activation production model. (The figure illustrates the case where two features [highlighted] are shared by the three semantically related lexical nodes. The phonological labels are informal.)” (Dell & O’Seaghdha, 1991, p. 605).

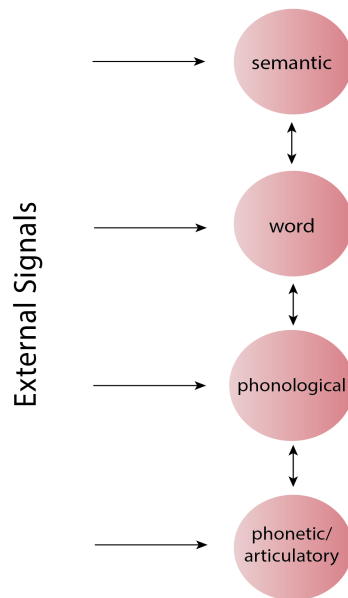
Based on a theory combining a spreading-activation retrieval mechanism with assumptions regarding linguistic units and rules, Dell (1986) proposed a modular but also interactive model, Dell’s spreading-activation model of speech production, and developed the first computational model of word production (Dell, 1986; Dell & O’Seaghdha, 1991; Dell & O’Seaghdha, 1992). This model, which has become one of

the most influential models of speech production, constitutes a major research tool in the speech error tradition since it accounts for facts about speech errors: the types of errors that occur, the constraints on their form and the causes of their incidence.

Dell's (1986) interactive model, like Levelt's (1989, 1996, 1999) discrete model, distinguishes four levels of representation constituted by semantic units, lemma or word units, phonological units and phonetic units. However, as an interactive model, Dell's model is characterized by the existence of bidirectional connections between these units organized in a network, which permit both, 'top-down spreading' activation from an activated word unit to a phonological unit, and 'bottom-up spreading' activation resulting from the activation of a semantic unit by an activated word. Furthermore, external inputs from modular linguistic rule systems intensify the activation in the network by enforcing the linguistic rules at each level and controlling the scheduling of the activation processes (See *Figure 5*).

Dell and colleagues (Dell, 1986; Dell et al., 1999; Dell & O'Seaghdha, 1991) claim that the language production system is globally modular, but, as mentioned above, it allows for the interaction between the different levels of the lexical network. These authors maintain that the mingling of information in speech errors constitutes strong evidence for such interaction among the different stages in language production.

Figure 5



“A simplified network in which external signals are received in sequence by nodes at four representational levels” (Dell & O’Seaghdha, 1991, p. 610).

Dell and O’Seaghdha’s (1991) model involves six stages:

1. The semantic units of the concept to be lexicalized receive external inputs.
2. Activation spreads in an unconstrained fashion throughout the network, as determined by the activation-updating function.
3. The most highly activated word unit is selected. Selection entails the linkage of this unit to the developing syntactic frame for the sentence.
4. When the word is ready for phonological encoding, it is given a triggering jolt of activation. For multi-word utterances, the timing of this jolt is controlled by the syntactic frame slot the unit is linked to. In the case of a single-word utterance, as in Levelt et al.’s (1991) naming task, we assume that the jolt is supplied immediately on selection.

5. Activation continues to spread as before, but because of the extra activation of the selected word unit, the appropriate phonological units become significantly activated.
6. The most active phonological units are selected and linked to slots in a constructed phonological frame, a data structure analogous to a syntactic frame” (pp. 605-606).

However, the authors remark the fact that this interactive spreading-activation network constitutes in effect a two-step model of lexical access and language production: in the six-stages described above, it can be observed that the first three steps correspond to lemma access, and the last three to phonological access. Interactive models do not exclude the overlapping of these two phases at some point during the lexicalization process.

The basic difference, thus, between Dell’s interactive model and Levelt’s discrete model is that the former is interactive rather than discrete, with activation spreading continuously and bi-directionally among semantic and phonological units. Therefore, although activation is mainly semantic/syntactic during lemma access, and activation is mostly phonological during phonological access, word selection is also affected by phonological information, and vice versa.

Interactiveness in models of lexical access provides a natural account for speech errors of semantic and phonological character, e.g., the interaction between all the units in the lexical network would explain the occurrence of a variety of speech-errors like the phenomena of familiarity and similarity, and the effect of speech rate on such errors (Dell, 1986; Harley, 1984). It is important to note that Dell does not consider speech errors to be malfunctions, but rather the result of the flexibility of the language system and of its need to be productive: “In the theory, the locus of a slip is that point where pre-stored knowledge in the lexical network comes in contact with

the productive knowledge represented by the generative rules. This is where the real decisions are made, and hence where the errors are made” (Dell, 1986, p. 319).

However, it has also been questioned whether interactiveness could be indeed a characteristic of the error mechanism itself, with an error occurring precisely because uncalled-for interactivity enters into play. The time course of production is such that activation from the lexeme level to the lemma level would not be possible because the work at the lexeme level is already involved with the selection of the next lemma. Production is always moving forward (Levelt, 1999).

Having outlined the mechanisms of lexical access and speech production in some influential models, the next section concentrates on some theories of lexical access of idioms, which provide important theoretical grounds for the construction and use of the research instruments of this study as well as for the interpretation of the results.

1.9. Idiomatic Expressions Access and Production

1.9.1. The role of literal meaning in idiomatic language comprehension

It has been proposed that literality and figurativeness stand as the opposite ends of a continuum where different kind of expressions are located given their degree of literality or idiomaticity. But how do we define the boundaries between these language features? (Cacciari, 1993).

There exists controversy as to where to establish the border between literal and idiomatic expressions, on the one hand, and metaphorical and idiomatic

expressions, on the other. Some academics have tried to differentiate between literal, idiomatic and metaphorical expressions on the grounds of their level of semantic transparency or opacity. Some others, like Fernando and Flavell (1981) suggest that the single possible distinctive criterion is a pragmatic one based on the concrete usage of idiomatic expressions by native speakers of a language.

One conception of literal language is the assumption that sentences have well-specified literal meanings that can be understood without the need of contextual information. Scholars of several areas of cognitive science claim that sentences have well-defined literal meanings that are not determined by context and enriched pragmatics. From this view, all sentences have literal meanings strictly based on the meanings of the words they comprise and on the rules of grammar that determine the particular combination of these words. Thus, a substantial number of sentences of a natural language can be comprehended by a competent speaker-hearer without knowing who said the sentence, when, where or why it was said. In other words, sentence comprehension can occur in the total absence of contextual information (Frege, 1892).

In line with this notion, Katz and Fodor (1963) explained the concept of literal meaning on the grounds of what they called ‘the anonymous letter criterion’: A competent speaker-hearer of a language gets an anonymous letter containing just one sentence. The motives, circumstances and context are not specified at all. Katz and Fodor’s (1963) notion of semantic competence is the interpretation of a sentence by an ideal speaker-hearer in the absence of any contextual information, that is, in a ‘null context’ situation. The literal meaning, or sentence meaning, denotes purely a semantic interpretation while the contextual meaning, or speaker meaning, embodies a pragmatic interpretation. Thus, what the recipient of the letter will understand is the

semantic interpretation of the sentence, i.e., the *sentence meaning* (its literal meaning), rather than the *utterance meaning*, which does require contextual information (Cacciari, 1993).

Some authors (Clark & Carlson, 1981) question the literal meaning hypothesis and claim that this proposal does not take into consideration factors such as linguistic assumptions and background knowledge that are inevitably involved in the language comprehension processes.

Gibbs (1984, 2002) also contests the literal meaning hypothesis, which assumes that the computation of the literal meaning of a sentence is required for its correct interpretation and understanding. He argues that a language user is normally able to use pragmatic information at the initial stages of sentence comprehension without having to first access the literal meanings of the sentence constituents. Gibbs claims that it is not possible to keep a separation between semantics and pragmatics, since the semantic representations of the words of which a sentence is comprised are necessarily connected with the rest of the speaker's knowledge.

According to Gibbs (1984), it is hard to prove that all sentences have clear literal meanings, and for the cases where this may be true, these meanings are not always used for language comprehension. To support his claim, he quotes Jackendoff (1981, p. 425) who affirms that "There is no single level of representation which is exclusively devoted to expressing 'literal meaning' and which is also the domain over which semantic properties and relations are formally defined". Gibbs (1984, 2002) argues that listeners do not need to automatically process the complete literal meanings of idiomatic expressions before accessing their figurative meaning.

Dascal (1987) rejects Gibbs' notion of literal meaning as non-essential for the understanding of figurative language. He states that in the total absence of literal

meaning all the understanding of language would have to be contextual, a fact that would confer this process with a set of infinite and indefinite possibilities of meaning. “The denial of the existence of a more restricted set of meanings, which serves either as base or as a frame of reference for the subsequent search of meaningful aspects of context, seems to preclude the possibility of developing a satisfactory *psychological* account of the process of comprehension” (p. 276). Dascal proposes that the concept of literal meaning should be widened to incorporate the conventional meaning given to certain expressions. His “moderate literalism hypothesis” assumes that the meaning of figurative language items can be retrieved directly because their literal meaning also incorporates certain conventional indirect or metaphorical meaning previously acquired. However, Cacciari (1993) states that the concept of conventionality is too general and ambiguous, and thus it does not contribute more than the literal meaning hypothesis to the theories on figurative language access.

Rumelhart (1979) proposed that a literal language conception grounded on the basic intuition of native speakers of a language should not be discarded. He affirmed that the judgement people use to decide if an utterance has literal or metaphorical meanings is equivalent to the judgment they use to distinguish between formal and informal language. In both cases, the same language comprehension processes are at work. Therefore, distinguishing between literal and metaphorical language is not reflected in a qualitative change in the processing mechanisms of language.

The former notion is shared by Gibbs (1984, 2002) who also affirms that the same comprehension processes operate for both, literal and figurative or idiomatic language. He argues that the fact that researchers make a distinction between literal and idiomatic meaning and label them correspondingly, does not necessarily imply

that there should be two different kinds of processing modes, literal and figurative, to access these meanings.

So, the definition of literal meaning seems to be more a philosophical matter that entails different ideas and conjectures. It has gone from idealised and oversimplified models of language to more complex and multi-levelled ones (Lakoff, 1986; Fillmore, 1979). Gibbs et al. (1993) found that people have at least five ideas as to what constitutes the literal meaning of a sentence: conventional meaning, subject-matter meaning, non-metaphorical meaning, truth-conditional meaning, and context-free meaning. According to these authors, “it is unlikely [...] that there is a single set of attributes that uniquely defines the literal meaning of a sentence in the same way in all contexts. Literal meaning is not theory neutral, but a complex “folk” notion that can easily conflate different aspects of meaning” (p. 400). On the other hand, for Temple and Honeck (1999), literal meaning is “based on the different values of the words and their syntactic combination, activated background knowledge, lexicalized phrasal constituents, and their conventional usages” (p. 48).

There is indeed little agreement on how to define literal meaning. However, the notion that native speakers of a language can reliably distinguish between more or less literal and more or less figurative sentences is valid and it has proved to work well in research of language comprehension. As Cacciari (1993) writes: “Purely figurative and purely literal utterances are at best “rare”, but still we are aware of the existence of, and able to use, such a distinction. This does not imply, according to Rumelhart, any claim or need to postulate different [language] processing mechanisms or strategies” (p. 30).

The role that literal meaning plays in figurative language comprehension has been actively explored for the last three to four decades. According to Gibbs (2002),

two main views on how people use the literal meaning of words and utterances to understand figurative language have been vigorously debated in research: the *standard pragmatic view* and the *direct access view*.

1.9.1.1. The standard pragmatic view

The standard pragmatic view assumes that, whether the speakers' message conveys literal or figurative language, listeners first analyze what speakers say literally. If listeners find that the information given is unclear and contextually inappropriate, then they use the pragmatic information available to deduce what speakers implicate in their message. A good example is Bobrow and Bell's (1973) *Idiom List Hypothesis*, often referred to as the *Literal-First-Hypothesis* of idiom comprehension (Vega-Moreno, 2001), which relies on the notions that there are distinct idiomatic and literal strategies of processing sentences, and that the meanings of idiomatic expressions are stored in a separate list of the mental lexicon of speakers. This hypothesis assumes that the literal meanings of any kind of expression are activated by default. If the meanings do not match the context, then the idiomatic processing mode gets activated in search for the correct entry in the 'idiom mental dictionary'.

Therefore, while understanding literal language is a straightforward process that only requires the access to semantic information, the comprehension of figurative language requires an extra step, departing from this initial literal comprehension stage to figuring out what is what the speaker wants to say by using the corresponding contextual information. From this view, understanding figurative language is more difficult and more time consuming than understanding equivalent literal speech.

1.9.1.2. The direct access view

On the other hand, the direct access view is based on the assumption that a listener does not need to analyze the literal meanings of all the words in an utterance before accessing the appropriate contextual information in order to infer what the speaker really wants to say. Swinney and Cutler (1979), similarly to Bobrow and Bell (1973), propose in their *Lexical Representation Hypothesis* that idiomatic expressions are represented in the mental lexicon of a speaker like morphologically complex words. However, Swinney and Cutler's Lexical Representation Hypothesis, also denominated as the *Simultaneous Processing Hypothesis* (Vega-Moreno, 2001), proposes that idioms are stored in the general lexicon of the speakers, and not in a separate mental list like Bobrow and Bell claim. But the fundamental difference between the Idioms List Hypothesis and the Lexical Representation Hypothesis is that, contrary to what Bobrow and Bell suggest, Swinney and Cutler believe that the language comprehension processes for literal and figurative language are the same. Therefore, the computation of both kinds of meanings starts simultaneously as soon as the first word of the expression is encountered. Under this perspective, since retrieving the literal meaning of an expression takes longer than the computation of the figurative one, the idiomatic meaning is accessed first.

According to Gibbs (2002), even though listeners do not need to access the literal meanings of the entire utterance before retrieving its figurative meaning, they may analyze some properties of the words in such expression. He revises the notion of literal meaning in his earlier empirical work (Gibbs, 1980, 1986a, 1986b), which equates literal meaning to context-free, semantic meaning, and labels this view as incorrect by claiming that important aspects of what speakers say highly rely on enriched pragmatic knowledge. Gibbs (2002) affirms that "people may indeed analyze

aspects of what speakers say as part of understanding what speakers conversationally implicate” (p. 475).

Thus, while maintaining his claim on the lack of evidence to support the idea that speakers process the complete literal meanings of idiomatic expressions at some stage during idiom comprehension, Gibbs asserts that people analyze aspects of what speakers pragmatically say as part of inferring what speakers really imply, and that people can reliably distinguish between what speakers say and implicate. He remarks that the pragmatic information speakers want to convey may not totally correspond to the literal meanings of their utterances. In other words, what is said and implied may be different²². Gibbs (2002) adds that the reason why sometimes listeners take longer to understand figurative utterances than literal expressions is not clear yet, but it may be due to the difficulty in integrating the idiomatic meaning with the contextual information rather than because the literal meaning is analyzed first and then rejected before accessing the figurative one.

1.9.2. Idiom comprehension theories

Idiomatic expressions seem to be acquired naturally and effortlessly by native members of a speech community. However, non-native speakers of a language show great difficulty in their acquisition and mastery. While the acquisition of idioms by first and second language speakers has received some attention, more active research

²²*Bill is a new tenant in an apartment building.
His neighbour Jack has lived there for four years.
Bill was concerned that the building might be too loud.
Bill decided to ask a neighbour about it.
Bill asked Jack since he was the only neighbour Bill had met.
Jack replied,*

*“This is a very noisy building.” (said/implied identical)
“I usually sleep with earplugs.” (said/implied different)
(Gibbs, 2002, p. 478)*

on the nature of idioms and on the processes involved in their access and comprehension by both groups has been performed.

Vast investigation on idiom comprehension that involves both perspectives –the standard pragmatic view and the direct access view– on idioms retrieval has been undertaken. A number of theoretical models have been proposed to explain the mechanisms by which people, native and non-native speakers of a language store, produce and understand idiomatic expressions. The results of research on the activation of the idioms' figurative meanings versus literal meanings, and the processing of idiomatic expressions versus novel (non-idiomatic) expressions have been found to support both views, the standard pragmatic view and the direct access view.

Some of the most influential theories on idiom comprehension and the role that literal meaning plays to understand figurative language will be described next, grouped according to their approach to the compositionality and semantic analyzability of idiomatic expressions.

1.9.2.1. Noncompositional models

The noncompositional approach assumes that idioms are stored in the mental lexicon as single lexical items and retrieved as wholes. From this perspective idioms constitute frozen multi-word lexical units whose individual constituents' meanings do not contribute to the meaning of the expression. Hence, idioms are equated to long words.

The noncompositional approach is represented by three influential hypotheses on idioms comprehension: Bobrow and Bell's (1973) Idiom List Hypothesis, Swinney

and Cutler's (1979) Lexical Representation Hypothesis, and Gibbs's (1980) Direct Access Hypothesis.

Idiom List Hypothesis. Bobrow and Bell (1973) regard idiomatic expressions as long words, and propose that they are stored as single units in the mental 'idiom word dictionary', which constitutes a separate list from the ordinary language mental repertoire, and respectively accessed as single lexical items. According to this view, the literal meaning of the sequence is processed first, and it is only after the listener rejects this interpretation that the mental idiom list is searched through in order to find the idiomatic expression that represents a correct interpretation.

In other words, these authors suggest that the literal mode of processing is activated first by default, and if this meaning is not contextually appropriate, then the idiom mode of processing gets activated and a suitable idiomatic expression is retrieved from the idiom word dictionary.

Bobrow and Bell (1973) ground their proposal on the results of their lexical decision reading task experiment, where individuals had to decide between the literal and figurative meaning of ambiguous expressions having both idiomatic and literal meanings. Findings showed a decreased probability of participants initially accessing an idiomatic interpretation for an idiom that was preceded by a series of literal sentences (Titone & Connine, 1994b), and not a significant increase in this probability when the previous set of sentences presented to participants was constituted by idiomatic expressions.

This model, also referred to as the Literal First Hypothesis (Vega-Moreno, 2001), predicts, thus, a complex three-step model, and assumes that there are distinct idiomatic and literal modes of processing sentences, granting priority to the literal

interpretation. However, a number of psycholinguistics and pragmatics studies provide good evidence to challenge this priority (Gibbs, 1994; Recanati, 1995; Wilson, 1995).

Lexical Representation Hypothesis. According to Swinney and Cutler (1979), idioms are indeed represented and processed as wholes in the mental lexicon, but in the standard mental lexicon of the speaker and not in a special separate list of idioms as Bobrow and Bell (1973) suggest. They also argue against the priority of literal interpretation and propose parallel processing instead. Thus, when the listener or reader encounters the first word of an idiomatic expression, both figurative and literal processing modes are activated simultaneously, but the figurative meaning is favoured as soon as the features of the idiomatic expression are identified (Vega-Moreno, 2001).

Swinney and Cutler (1979) predicted that accessing the idiomatic meaning of an expression would be faster than computation of the literal interpretation, on the assumption that access is faster than computation (Titone & Connine, 1994b). They criticized Bobrow and Bell's (1973) research because the latter drew conclusions about the online comprehension of idiomatic expressions using a post-perceptual task rather than an online task. Thus, Swinney and Cutler (1979) used a visual phrase-classification task devised to tap the time course of the access and processing of literal and idiomatic strings more closely. They found that the latencies for deciding whether a word sequence was a valid English phrase were shorter for idiomatic expressions than for literal control expressions. Their findings supported their prediction that idioms are retrieved faster than literal strings.

Even though Bobrow and Bell's (1973) Literal First Hypothesis and Swinney and Cutler's (1979) Lexical Representation model, also referred to as Simultaneous Processing Hypothesis (Vega-Moreno, 2001), disagree in how and when the meaning of idiomatic expressions is accessed, they both assume that the literal processing mode is always triggered (Titone & Connine, 1994b).

Direct Access Hypothesis. Gibbs's (1980) Direct Access Hypothesis, also referred to as the Figurative First Hypothesis (Vega-Moreno, 2001), suggests that idioms are lexical items whose idiomatic meaning is retrieved directly from the speakers mental lexicon as soon as the expression is encountered. Contrary to Bobrow and Bell's (1973) and Swinney and Cutler's (1979) models that do not preclude the computation of the literal meaning, the direct access model assumes that, given the appropriate context, only the figurative meaning of the expression is available during comprehension (Titone & Connine, 1994b). That is, the figurative meaning of an idiom can be activated without triggering the literal meaning of the expression.

Gibbs (1980) challenges Swinney and Cutler's account suggesting that the finding that idioms such as *kick the bucket* are processed faster than equivalent literal strings such as 'strike the pail' does not necessarily mean that the literal processing mode is activated at all. Thus, the computation of the literal meaning of the expression is not only not prior (or occurs simultaneously) to the processing of the literal meaning, but it can also be completely circumvented (Vega-Moreno, 2001). Only if the idiomatic meaning is inappropriate to the contextual information, it is then interpreted literally (Havril, 2009).

Gibbs used a visual paraphrase-judgment task where participants had to decide whether the paraphrase of a sentence comprising an idiom used either literally or

figuratively (e.g., “You can let the cat out of the bag” or “Aren’t you skating on thin ice?”) was valid. Decision latencies for paraphrase discernments referred to idioms used idiomatically were shorter than judgements for idioms used literally. Since Gibbs direct access model gives priority to the idiomatic meaning processing, it accounts for these results where participants took less time to discern the idiomatic meaning over the literal meaning of the paraphrases presented (Titone & Connine, 1994b).

Gibbs (1980) concludes that “when an unconventional use of an idiom is encountered, people tend to automatically analyze the conventional, idiomatic meaning of the utterance before deciding that the literal meaning is appropriate” (p. 155). With this he rejects the accounts where people compute the literal meaning of an utterance before deriving the conveyed meaning.

Even though the noncompositional idiom comprehension models previously described differ in terms of the way the idiomatic meaning is retrieved, they all assume that the figurative meanings of idiomatic multi-word sequences are semantically different from the literal meanings of the constituent words. Thus, the idiomatic interpretation of an expression involves the retrieval of a semantically arbitrary single phrasal meaning, while the literal interpretation of an idiomatic expression is retrieved through the access of the meanings of its constituent individual words.

An important limitation of noncompositional models is that they do not account for idiom flexibility since they assume that idiomatic expressions are stored as frozen single lexical items, which gives no basis for idiom variations and modifications. However, a significant contribution of this approach to the study of the

idiom comprehension processes is that considering idioms as unitary lexical items allows for them to be regarded as holistic conceptual entities (Vega-Moreno, 2001).

1.9.2.2. Compositional models

Other accounts (Cacciari, 1993; Cacciari & Glucksberg, 1991; Cacciari & Tabossi, 1988, 1993; Gibbs, 1992, 2002; Gibbs et al., 1993; Gibbs, Nayak, & Cutting, 1989; Glucksberg, 1993) argue against the noncompositional approach to idiomatic expressions, and regard idioms as multi-word linguistic entities, whose idiomatic meaning does not represent, in most cases, a completely arbitrary relation with the meanings of their constituent words.

The compositionality principle, sometimes called ‘Frege’s Principle’, holds that the “meaning of an expression is a function of the meanings of its parts and of the way they are syntactically combined” (Partee, 1984, p. 281). Compositional accounts of idioms assume that the meanings of the words contained in an idiom play a significant role in its comprehension. Furthermore, the semantic productivity of an idiom is based on the degree of compositionality that characterizes it, since the syntactic and lexical properties of its constituents allow speakers to use the composing words in a sensible manner to successfully alter the idiom without losing its idiomatic interpretation, or to produce a new idiomatic meaning. Thus, the compositional approach to idiom comprehension highlights the role that constituent word meanings play in the interpretation of idiomatic expressions, while acknowledging the holistic characteristics of their conceptual representation.

Configuration Hypothesis. Cacciari and Tabossi (1988) suggested that idioms are distributed representations, or word configurations, rather than lexical entries.

They used cross-modal lexical priming methodology²³ to measure the relative activation of idiomatic and literal meaning during idiom comprehension. Based on their findings, the authors claim that the literal meanings of the individual words of the sequence are activated until the ‘idiomatic key’, which constitutes the place where the utterance becomes recognizable as an idiom, is encountered. Once the idiomatic key is activated, the idiomatic configuration emerges and the literal meanings of the remaining lexical items in the string may not be computed.

Their results are inconsistent with the direct access hypothesis, which assumes that the idiomatic interpretation should always be faster than the literal interpretation, and that literal interpretation may be completely bypassed.

Thus, the configuration model proposes that idioms are not single lexical items encoded in the mental lexical repertoire of the speaker, but rather configuration of words whose meaning is accessed when sufficient input has made the idiomatic configuration identifiable. In other words, in the absence of contextual information that could facilitate the prompt recognition of an idiom (in the same way that context can assist the recognition of a word) the interpretation of an idiomatic configuration will not be possible until the idiomatic key is reached.

Cacciari and Tabossi’s (1988) approach assumes that words are represented in the mental lexicon only in one form, i.e., there are no different ‘types’ of lexical items (literal versus idiomatic). This view predicts that the first interpretation available for an idiom will depend on how soon in the string the idiomatic key is reached: an early encounter will only trigger the idiomatic interpretation, while a late one, until the end of the string, will trigger the literal interpretation before the

²³ “The Cross-Modal Priming Task (CMPT), developed by David Swinney (1979), is an online measure used to detect activation of lexical and syntactic information during sentence comprehension.

nonliteral one comes up. Furthermore, because idioms are processed like any other string, this approach also accounts for the syntactic parsing of idioms.

Thus, besides allotting the meanings of the individual words in configurations an important role in immediate idiom comprehension, the configuration view asserts that these meanings contribute significantly to the syntactic and lexical flexibility of idioms by enabling speakers to produce (and understand) syntactic and lexical variants of familiar idioms. Also, it suggests that the internal semantics of an idiom's elements are involved in two significant idiom phenomena: *semantic productivity*, which, as has been previously discussed, allows people to create an idiom with a new meaning by changing various aspects of the individual elements of an old one; and *discourse productivity*, a relatively unexplored phenomenon that consists of using the semantics of the words in an idiom in an answer to a question containing such idiom²⁴. However, it has been pointed out that analyzability accounts only partially for these phenomena, finding that even nondecomposable idioms, such as *speak one's mind*, can be semantically productive (Cacciari & Glucksberg, 1991).

Phrase-Induced Polysemy Hypothesis. Consistent with the idiom productivity account, Glucksberg (1993) proposed his phrase-induced polysemy hypothesis which assumes that “the constituent words of familiar idioms acquire, through repeated use in idiom contexts, the meanings that are appropriate for the idioms in which they appear. After these phrase-specific meanings have been acquired, then idiom variants that preserve the relationships among the constituent idiomatic concepts can be understood via ordinary linguistic processing. In this way, idiom variants can be understood exactly as literal expressions are understood – by accessing context-

²⁴ “Mary: Did Harry speak his mind on the bond issue?
Sally: He can't speak his mind if he doesn't even know it yet!”
(Cacciari & Glucksberg, 1991, p. 228)

appropriate constituent word meanings and identifying the syntactic and semantic relations among those constituents” (p. 13). In other words, as a result of their frequent use as part of idioms, the individual words comprised in idiomatic expressions become polysemous and acquire new meanings by drawing from their compositional meaning within the idiomatic setting.

According to Glucksberg (1993), when idioms are recognized immediately as such (i.e., idiomatic expressions), syntactic linguistic processing is bypassed completely. This is because the meaning of an idiom may be accessed directly from memory. Direct memory retrieval economizes time because it is faster than standard linguistic processing. Idioms have stipulated idiomatic meanings, a learned arbitrary relation between a phrase and a particular meaning, just as the meaning of words are learned as arbitrary relations between linguistic units and their connotations.

However, some idioms’ meanings may be retrieved by syntactic processing, using the contextually appropriate idiomatic meanings of the idiom’s constituent words, if these constituents have already acquired specific idiomatic meanings with repeated use. For instance, through the frequent use in the English speakers community of the idiom *spill the beans* whose idiomatic meaning is “to reveal the secrets”, the word *spill* has been paired with the concept of “divulge” and represented as such in lexical memory.²⁵ In a sentence comprising the word *beans*, the idiomatic meaning of *spill* is activated automatically, just as the meaning of any polysemous word is activated automatically within the appropriate context (Glucksberg, 1993).

Glucksberg (1993) points out that once these idiomatic meanings have been acquired, the meanings of familiar idioms could be either retrieved by direct access of

²⁵ One of the entries of the Random House Dictionary of the American Language for *spill* is “to divulge, disclose or tell” (p. 1266), in line with the meaning of the idiom *spill the beans* whose idiomatic meaning is “to reveal the secrets” (Glucksberg, 1993).

the stipulated idiomatic meaning, or generated by ordinary linguistic processing. Direct access speeds up the retrieval of familiar idiomatic expressions, which will be understood more easily than analogous literal expressions. But if direct access is not successful due to a memory failure, or because it is a variant of an idiom containing some different words than the words in the original one, the meaning of an idiom may still be retrieved through linguistic processing since the words of the original idiom have acquired ‘phrase-specific’ idiomatic meanings.

Glucksberg (1993) states that not all idioms can undergo phrase-induced polysemy. This process may seem to be mainly confined to idioms that are compositional to a high degree, meaning by ‘compositionality’ a degree of comprehension and use, versus the term ‘analyzability’ that, in words of the author, “suggests a judgmental operation, not interactive language use” (p. 17).

In general, idioms will vary in the extent of their compositionality. Fully compositional idioms allow for some variants because their components can be mapped onto their corresponding idiomatic referents, e.g., *pop the question*, where the verb *pop* and the noun phrase *the question* are mapped directly onto their idiomatic referents “suddenly ask” and “marriage proposal”. In contrast, less compositional idioms – or not compositional at all, such as *kick the bucket* whose constituents cannot be mapped individually in a ‘one-to-one fashion’ to the idiom’s meaning of “die”, cannot be varied productively and will only be understood as a whole, since their constituents do not produce ‘phrase-induced idiomatic meanings’ (Glucksberg, 1993).

Yet, it has been observed that there are some low-compositional idioms that can be varied productively such as *two left feet* indicating clumsiness, and *three left feet* pointing to an even larger clumsiness. Therefore, as Glucksberg (1993) mentions,

compositionality is not an essential condition in some cases for the productive variation of an idiom.

It has been suggested that understanding a variant of an idiom should take longer than understanding familiar idioms and literal strings of the same length since the listener would need to go through the following steps:

1. “Recognize the idiom as a variant of a conventional idiom.
2. Retrieve the meaning of the original idiom.
3. Identify the constituent meanings of both the variant and original idioms
4. Compare the constituent meanings of the two idiom forms.
5. Identify the relation(s) between those meanings e.g., verb, tense, quantification, negation, etc.
6. On the basis of this relation, infer the relation between the meanings of the original and their variants” (Glucksberg, 2001, p. 29).

However, Glucksberg’s (1993, 2001) phrase-induced polysemy proposal argues against this model of idiom variants comprehension by assuming that the interpretation of variants of idioms that have undergone phrase-induced polysemy is accomplished through ordinary linguistic processing in which the more adequate (figurative) meaning is accessed and retrieved through a fast process of conceptual integration, which reduces steps 3 to 6 to a single one (Vega-Moreno, 2001). Research findings support this assumption that understanding idiom variants do not take longer than to understand literal expressions of the same length (McGlone, Glucksberg, & Cacciari, 1994).

Idiom Decomposition Hypothesis. A significant idiom comprehension account that, like the configuration hypothesis and the phrase-induced polysemy hypothesis (Cacciari, 1993; Cacciari & Glucksberg, 1991; Cacciari & Tabossi, 1988, 1993; Glucksberg, 1993, 2001), assigns the internal semantics of idiomatic expressions an important role in their use and interpretation is Gibbs, Nayak and Cutting's (1989) idiom decomposition hypothesis. This hypothesis holds that idiom comprehension is highly dependent on the degree of decomposability of an idiom, which can be defined as the degree to which the individual components of an idiomatic expression independently contribute to the overall figurative meaning of such expression.

Based on Nunberg's (1979) typology that classifies idioms into normally decomposable, nondecomposable and abnormally decomposable, Gibbs and colleagues (Gibbs Jr & Nayak, 1989; Gibbs, Nayak, Bolton, & Keppel, 1989; Gibbs, Nayak, & Cutting, 1989) described as normally decomposable idioms those ones where the overall figurative meaning shows an obvious relation with the meanings of the constituent words. In contrast, nondecomposable idioms are expressions constituted by words that do not have any semantic relationship with the overall idiomatic meaning, i.e., where an obvious relation between the individual constituents and the figurative meaning of the idiom does not exist. Finally, abnormally decomposable idioms are situated in the middle of the continuum by comprising words that do not map directly onto their idiomatic meanings, but that do relate metaphorically to their figurative referents instead.²⁶

²⁶ "Idioms are more analyzable to the extent that their individual components share the same semantic fields with their idiomatic references. For example, the individual parts of *pop the question* must be in the same semantic field, or conceptual domain, as their idiomatic references "propose" and "marriage" for this idiom to be viewed as decomposable. However, the individual components of phrases such as *kick the bucket* or *chew the fat* are not in the same semantic fields as their respective figurative referents (i.e., "to die" and "to talk without purpose") and should not be viewed as semantically decomposable. There is, of course, some relationship between *chew the fat* and "to talk without purpose" and *kick the bucket* and "to die", but these relations are historical and/or arbitrary and it is

The criteria for the allocation of the idioms used in this research into normally decomposable, abnormally decomposable or nondecomposable idiom categories were based on people's intuitions as reported in previous studies (Gibbs Jr & Nayak, 1989; Gibbs, Nayak, Bolton, et al., 1989). Even though there are no clear mechanisms for determining the semantic analyzability of idioms, Gibbs et al. (1989) believe that people's intuitions on what idioms are more analyzable or decomposable than others, or which ones are nondecomposable, are highly reliable. Obviously, analyzability judgements vary from one person to the other, but a reasonable consistency in people's intuitions has been observed. Furthermore, it has been found a relation between semantic analyzability of idioms and people's perceptions about the syntactic versatility of these expressions: semantically decomposable idioms were considered to be more syntactically flexible or productive than nondecomposable idiomatic expressions (Gibbs Jr & Nayak, 1989).

Thus, Gibbs et al. (1989) used idioms rated with different analyzability degrees to measure the overall difficulty in processing different types of idioms. They examined the role of idiom analyzability or semantic decomposition in processing idiomatic expressions through a series of experiments that measured the reading latencies of a task where participants had to decide if the string presented, whether idiomatic (e.g., *pop the question* [normally decomposable]; *kick the bucket* [nondecomposable]; *carry the torch* [abnormally decomposable]) or its matched non-idiomatic control string (e.g., *ask the question*; *fill the bucket*; *light the torch*), was a meaningful phrase in English.

Contrary to what they had originally predicted –that people would take longer to process normally decomposable (analyzable) idioms because a compositional

difficult for people to assign the individual parts of these idioms with particular parts of their overall figurative meanings” (Gibbs, Nayak, & Cutting, 1989, p. 578).

analysis should be performed, compared to nondecomposable idioms which could be retrieved holistically from the mental lexicon, they found that normally and abnormally decomposable idioms were processed faster than nondecomposable ones. Quicker reading times for decomposable idioms suggest that the comprehension of idiomatic expressions involves an initial attempt to do some compositional analysis (Gibbs, Nayak, & Cutting, 1989). These findings are consistent with the configuration hypothesis (Cacciari & Glucksberg, 1991; Cacciari & Tabossi, 1988) which emphasizes the compositional nature of idioms. The results of this study suggest that the meanings [not necessarily literal] of the constituent words ease the understanding of an idiomatic expression if they are related to its overall figurative meaning (Titone & Connine, 1994b).

Furthermore, Gibbs et al. (1989) also found that participants were faster at verifying the normally and abnormally decomposable idioms than at verifying the corresponding non-idiomatic control strings, but were significantly slower at verifying the nondecomposable idioms than their matched literal control strings. The authors argued that decomposable idioms (e.g., *pop the question*) are processed faster than their matched literal control phrases (e.g., *ask the question*) because the individual components of the idiomatic expression contribute to the idiom's overall figurative meaning. This is not the case of nondecomposable idioms (e.g., *kick the bucket*) where such a contribution is not found, thus no processing advantage is expected.

It is important to highlight the fact that for Gibbs and colleagues, the figurative meaning of an idiom is largely motivated by the speaker's implicit knowledge of the conceptual metaphorical meaning lying beneath this idiom. Their idea of semantic decomposition of idioms does not reside in the 'alleged' literal

meanings of the individual components of an idiomatic expression. They disagree with the generalized assumption in literature on lexical decomposition that the compositional analysis of an idiom is equivalent to its literal analysis. The idiom decomposition hypothesis assumes indeed that people examine what the words mean during idiom comprehension, but this fact does not imply that the meanings activated are necessarily their literal meanings (Gibbs, 2002).

Hence, the decompositional approach contends that people can acknowledge the independent, figurative meaning of the individual parts of decomposable idioms. “Readers’ assumptions about how the individual components of idioms refer to the metaphorical concepts underlying their figurative referents result in different information being activated than when literal language is comprehended” (Gibbs, Nayak, & Cutting, 1989, p. 591). Thus, for Gibbs and colleagues the motivation in idioms remains at a conceptual level, not at a lexical one (Cacciari, 1993).

According to Abel (2003), rather than being an assumption on idiom processing, the idiom decomposition account constitutes a hypothesis on the analyzability of idioms. Nevertheless, Gibbs decompositional theory has been highly influential in the research of the processes involved in the interpretation of idiomatic expressions, and to the development of subsequent models of idiom comprehension.

Contradictory research findings have both supported or rejected the compositional accounts of idioms comprehension. For instance, other research findings do not support Gibbs et al.’s (1989) results which suggest that processing nondecomposable idioms takes longer than their matched literal control phrases

because the idiom constituents do not contribute to the overall figurative meaning. Conklin and Schmitt (2012) found that in a semantic judgement task, native speakers were faster responding to decomposable and nondecomposable idioms than to matched novel expressions (Tabossi, Fanari, & Wolf, 2009). These results suggest that idiomatic expressions, whether decomposable or nondecomposable, are processed faster than novel (compositional) language, and that the relation between the overall figurative meaning of the idiom and the meanings of its constituent words does not seem to have an effect in its processing.

Criticisms among their own proponents have also emerged in the literature of idiomatic expressions. For example, Cacciari (1993) argues against Gibbs and colleagues' (Gibbs Jr & Nayak, 1989, 1991; Gibbs, 1994; Gibbs, Nayak, Bolton, et al., 1989; Gibbs, Nayak, & Cutting, 1989) metaphorical conception of idioms which, according to her, does not consider some important aspects of language use: (a) The automatic computation of words' meanings that cannot be just sidestepped by language users; (b) Idioms' constituent words are, most of the time, not grouped arbitrarily but according to 'meaningful principles' and, (c) Language interpretation is always a creative process. Thus, although idioms have meanings that are stored and accessed as holistic semantic concepts, they most likely activate to a certain degree the language mechanisms involved in the interpretations of the composing words, the words' grouping structure, and even the metaphorical conceptual templates suggested by Gibbs and Nayak (1989).

On the other hand, Gibbs (2002) criticizes Cacciari and Tabossi's (1988) methodology used in the study upon whose results they based the proposal of the configuration hypothesis. Cacciari and Tabossi compared speeded responses to targets reflecting the meanings of single words (literal targets) with responses to targets

reflecting the figurative meaning of whole idiomatic expressions (idiom targets). Since these targets reflect different levels of meaning, that is, word versus phrase, Gibbs claims that their research did not legitimately test whether there are ongoing compatible literal and figurative processes at both the word and sentence level.

To Gibbs, the fact that one kind of meaning is labeled as ‘literal’ and the other ‘idiomatic’ does not necessarily imply that two different types of processing mechanisms should be at work. “The possibility remains that activation of different kinds of meanings (i.e., literal or idiomatic) may really reflect different types of meaning accessed by a single linguistic process” (Gibbs, 2002, p. 466).

1.9.2.3. Hybrid models

The compositional approach accounts for the semantic and syntactic flexibility of idioms, and highlights the fact that idioms are not simply frozen nondecomposable multi-word units that are stored in the mental lexicon and accessed as long words, as noncompositional models argue. However, as Titone and Connine (1999) point out, idioms are “highly overlearned word sequences that comprehenders have experience with as holistic units” (p. 1665), and a compositional analysis is not sufficient for their interpretation. Therefore, besides the relation between the meanings of the linguistic elements of an expression and its whole idiomatic meaning, there should be some kind of ‘pre-packaged meaning’ that can be associated with that particular sequence of words. “Hence, it seems that an adequate approach to idioms needs to account for their flexibility, but also for the complexity and holism of their conceptual representations” (Vega-Moreno, 2001, p. 76).

Based on these presuppositions, some hybrid models of idiom comprehension that take into account the compositional aspect of idioms without disregarding their

holistic features, have been proposed. Two important models among this category are Titone and Connine's (1999) Hybrid Model of Idiom Comprehension, and Giora and Fein's (1999b) Graded Salience Hypothesis, both of which will be outlined next.

The Hybrid Model of Idiom Comprehension. As mentioned before, research findings on idiom comprehension are often contradictory. For instance, Brannon (1975), cited in Popiel & McRae (1988), reported that participants took longer to classify sentences that contained an idiom with a plausible literal interpretation as compared to sentences that had an idiom with no possible literal interpretation. By contrast, Mueller and Gibbs (1987) found the opposite pattern of results, with participants taking longer to read and make paraphrase judgments about idioms with no possible literal interpretation as compared to idioms that had literal computation. Titone and Connine (1994b) offer a possible explanation to these contradictory results by proposing that if an idiom can be literally interpreted, the competition between the literal and idiomatic interpretation results in extended processing times. But if the idiom's literal meaning is not very salient or plausible, there is not such competition and the idiom can be interpreted faster.

Titone and Connine's (1994a) results of a previous study support this notion: They used a cross-modal priming task and found that the activation of the figurative meaning of idioms with a highly plausible literal interpretation was lower than the activation of the idiomatic meaning of highly predictable idiomatic expressions that did not have a plausible literal interpretation. They also found more activation of the literal meaning of the last word of highly predictable, literally plausible idioms at the acoustic offset, compared to highly predictable non-literal idiomatic strings.

Titone and Connine (1994b) proposed that idioms differ along four dimensions that significantly affect their comprehension: compositionality, familiarity, predictability and literality.

1. Compositionality, based on Nunberg's (1978) account, is defined as the manner in which the literal meanings of the words of an idiomatic expression contribute to its overall figurative meaning. Idioms may be classified into three different categories: normally decomposable, abnormally decomposable and semantically nondecomposable idioms.
2. Familiarity is described as the frequency with which a speaker comes across a word in written or spoken speech, and the degree to which the speaker easily understands such word.
3. Predictability refers to the probability of completing idiomatically an unfinished (idiomatic) expression.
4. Literality denotes an idiom's potential for a literal interpretation.

In Titone and Connine's (1994b) study, 226 participants rated 171 idiomatic expressions on these four dimensions. They found that predictability correlated significantly with alternative ratings of familiarity, but did not correlate neither with compositionality nor with literality, suggesting that idiom predictability is partly related to the familiarity of an expression, regardless the compositionality degree or possible literal interpretation. On the other hand, literality negatively correlated with abnormal decomposability, which suggests that expressions whose lexical constituents' metaphorical meanings (and not their literal meanings) map onto the overall idiomatic meaning are less likely to be literally well formed.

However, Titone and Connine (1994b) did not find a consistent and reliable agreement for the dimension of compositionality, in contrast to the results reported by Gibbs and colleagues (Gibbs Jr & Nayak, 1989; Gibbs, Nayak, Bolton, et al., 1989; Gibbs, Nayak, & Cutting, 1989). Of the 171 idiomatic expressions rated by participants, only 40% were assigned to one of the three compositionality categories, suggesting that judgments of semantic analyzability are harder than proposed in Gibbs et al.'s studies. Other studies also support the notion that people's intuitions about decomposability are frequently unreliable (Abel, 2003; Tabossi, Fanari, & Wolf, 2008) and do not have any effect on comprehension (Tabossi et al., 2008).

In subsequent research, Titone and Connine (1999), based on findings from psycholinguistic research providing evidence for both noncompositional and compositional accounts on idiom processing, proposed their Hybrid Model of Idiom Comprehension that incorporates aspects of both approaches. This model describes idioms as being unitary word configurations and compositional word sequences at the same time, and assumes that the activation of idiomatic meanings, and the activation and use of the literal meanings during idiom interpretation, will depend on the level of conventionality and compositionality of the idiomatic expressions.

Titone and Connine's (1999) model is very similar in approach to Cacciari and Tabossi's (Cacciari & Tabossi, 1988) Configuration Hypothesis and Cacciari and Glucksberg's (1991) model, but the hybrid model of idiom comprehension adopted Nunberg's (1994) classification of idioms which state that idioms may vary along three orthogonal semantic dimensions: compositionality, conventionality and transparency.²⁷

²⁷ Nunberg et al's (1994) semantic dimensions have been outlined in 1.3.3. *Typology of idioms* section of this work.

Thus, this approach takes into account the degree to which the meanings of the individual constituents of an idiom can be mapped onto the overall figurative meaning of the sequence, i.e., compositionality, and recognizes the role that the literal analysis of idiomatic expressions can play in their interpretation, particularly for decomposable idioms.

Besides, conventionality, which refers to the degree to which a sequence of words is likely to have an idiomatic meaning in a particular speech community, is also considered to play an important role in idiom comprehension. Therefore, highly conventionalized idiomatic expressions, regardless of their degree of compositionality, will most probably be part of the mental lexicon of speakers of a specific communicative environment as holistic lexical entities, after several encounters and frequent use.

According to Titone and Connine (1999) this trait of idioms is particularly relevant for the interpretation of noncompositional idiomatic expressions, whose meaning can be directly and efficiently retrieved without the need of (unhelpful in this case) literal analyses, in the instance of highly conventionalized idiomatic expressions where the association between a particular configuration of words and a specific idiomatic meaning is highly overlearned. Since the co-occurrence of words embedded in the word sequence may be the trigger for the retrieval of the idiomatic meaning, Titone and Connine (1999) suggest that the position of the idiomatic key (Cacciari & Glucksberg, 1991; Cacciari & Tabossi, 1988) will vary as a result of the degree of conventionality of an idiom. In other words, the meaning of familiar idiomatic expressions will emerge grounded on knowledge of the frequency of co-occurrence of the linguistic constituents, rather than on the semantic properties of those words. Previous research findings of a normative study (Titone & Connine, 1994b) that show

a significant correlation between idiom predictability and idiom frequency (both being important aspects of conventionality) support this notion.

Titone and Connine (1999) performed an eye tracking study to test the degree to which idiomatic and literal meanings were activated during idiom processing and their effects on idiom comprehension. They presented sentences containing decomposable and nondecomposable idiomatic expressions to participants and monitored their eye movement while reading. These sentences were embedded in biased contexts toward the idiomatic or literal meaning that preceded or followed the idiom. Reading times for both decomposable and nondecomposable idioms embedded in relatively unbiased context were not found to be different. However, decomposable idioms were read faster than nondecomposable idioms when the preceding contextual information primed either a figurative or literal interpretation. “Thus, semantic decomposability facilitated idiom processing at a later stage of comprehension – that is, when a specific phrasal meaning needed to be integrated into a specific context” (Libben & Titone, 2008, p. 1104).

According to Titone and Connine (1999), the literal and figurative meanings are always activated during idiom processing, regardless of the contextual information. Since the literal and idiomatic meanings of nondecomposable idioms are different, it takes more time for readers to find a contextually appropriate meaning. As for decomposable idioms, it is easier for readers to integrate a contextually suitable meaning because the idiomatic and literal meanings are semantically associated. Findings of Caillies and Butcher’s (2007) sentence-priming study showed that decomposable idiomatic expressions were processed sooner than nondecomposable idiomatic ones, demonstrating a clear effect of compositionality on the retrieval of the figurative meaning, thus supporting Titone and Connine’s (1999) results.

Titone and Connine (1999) conclude that “in addition to their conventionality-based noncompositional nature, idioms behave compositionally to the degree that they are decomposable and transparent. Given that word meanings are always activated during idiom processing, component words of idiomatic sequences may contribute substantially to the construction of idiomatic meanings (as they would for inherently compositional or transparent idiomatic combinations) or a minimal semantic contribution to the construction of idiomatic meanings (as they would for less compositional or transparent idiomatic phrases). Therefore, during idiom processing, the idiomatic meaning is directly retrieved when a sufficient portion of the idiom is encountered (i.e., at the idiomatic key), and a literal analysis of the phrase is carried out (e.g., word meanings are activated and compositionally combined)” (p. 1671).

Thus, Titone and Connine’s (1999) hybrid model of idiom comprehension incorporates aspects of the compositional and the noncompositional approaches by characterizing idiomatic expressions both as unitary lexical items and configuration of words depending on their degree of conventionality and compositionality, properties that will determine the activation of the figurative meanings, and the activation and use of literal meanings during idiom comprehension.

The Graded Salience Hypothesis. A thorough review and reinterpretation of relevant research on literal and figurative language (e.g., Blasko & Connine, 1993; Gerrig, 1989; Gibbs, 1980; Gibbs, 1984; Gregory & Mergler, 1990; Keysar, 1989) led Giora (1997) to conclude that figurative and literal language comprehension and use are ruled by a general principle of salience, and that salient meanings (e.g., conventional, frequent, familiar, enhanced by prior context) are computed first. She

suggested the modification of the traditional assumptions on language processing in terms of the graded salience hypothesis by proposing:

- a. Salient interpretation has unconditional priority over less salient interpretation: The most salient meaning of a word or an utterance is always activated.
- b. A novel interpretation of a salient meaning involves a sequential process, whereby the salient meaning is rejected as the intended meaning and reinterpreted. The more salient the reinterpreted language, the more difficult it is to reject as the intended meaning.
- c. Novel interpretation must be more difficult to derive; it should require more and different contextual support for its derivation (Giora, 1997, p. 200).

Giora's (1997, 1999; Giora & Fein, 1999b; Peleg, Giora, & Fein, 2001) graded salience hypothesis, also referred to as the *familiarity model* (Havrila, 2009), disregards the issue of compositionality in idiom processing, and rejects any competition between idiomatic and literal meanings during idiom processing. This hypothesis puts forward the priority of salient meanings as the key to idiom comprehension. It assumes the initial access to the most salient meaning of an expression, whether it is literal or idiomatic, regardless of the context in which such expression is embedded. Therefore, the processing differences in language interpretation do not reside in the literal and figurative aspects of language, but in a 'salient-nonsalient continuum' (Giora, 2002; Laurent, Denhières, Passerieux, Iakimova, & Hardy-Baylé, 2006); and, thus, the controversy on whether the processing of literal and figurative language involves the same or different mechanisms is not significant at the initial phases of comprehension (Giora, 2002).

For a meaning to be salient, it needs to undergo consolidation (Giora, 2003), i.e., to be already coded in the mental lexicon, and also be outstanding as a result of its

conventionality, frequency, familiarity and prototypicality. According to Giora (2003), “salience is not an either-or notion, however. Rather, it admits degrees” (p. 15). The graded salience hypothesis assumes that salient meanings are retrieved through a direct search in the mental lexicon as soon as the lexical stimulus is encountered, but the access to less salient meanings will involve further inferential processes and stronger contextual information (Giora, 2002).

As for context, according to Peleg et al. (2001), language comprehension involves two different mechanisms that do not interact but run in parallel: a) a linguistic mechanism, i.e., lexical access, that operates locally (on the word level); and b) a contextual mechanism, i.e., a expectation-driven mechanism, that operates globally at the point where preceding linguistic information has already been processed. Thus, even though context may play a role in comprehension and may be predictive initially making available some compatible meanings, it cannot block salient meanings because it does not interact with the lexical access process but runs in parallel. Only when the salient meanings are incompatible with the context, supplementary processes and/or stronger context will be required (Giora, 2002). However, according to the retention hypothesis that supplements the graded salience hypothesis (Giora, 2002, 2003; Giora & Fein, 1999b), contextually incompatible meanings are not discarded if they do not interfere with comprehension or contribute to the access of the compatible meaning,²⁸ but they will be discarded or will fade if they are disruptive or do not play a role in comprehension.

The results of Giora and Fein ‘s (1999b) study on salient and less salient figurative language are consistent with the graded salience hypothesis. They

²⁸ “Thus, the salient ‘amusing’ sense induced by the conventional irony *Very funny* would be retained in the ironically biasing context, because it is conducive to the interpretation of the compatible ironic sense. In contrast, the ironic ‘annoying’ sense should be discarded in the literally biasing context, because, in this context, it interferes with the compatible meaning” (Giora, 2002, p. 500).

performed three experiments using a word fragment completion test (cloze test) to measure the activation of literal and figurative meanings in biased contexts. Giora and Fein (1999b) found that for familiar idioms the literal meaning of the target sentence in an idiomatically primed context was activated to a much lower degree than the idiomatic meaning of the target sentence embedded in a context biased towards the literal meaning. As for less familiar idiomatic expressions, both the literal and the idiomatic meanings of the target sentences were highly activated in an idiomatically biased contextual situation, whereas in a literally primed context the degree of activation of the idiomatic meaning was really low. These results confirmed the predictions of the graded salience hypothesis concerning the comprehension of familiar and less familiar idiomatic expressions: when interpreting familiar idioms, the more salient meanings, the idiomatic ones, are always initially activated regardless of the contextual information, whereas in the interpretation of less familiar idiomatic expressions the more salient literal meanings are always activated during the initial processes of comprehension.

Giora and Fein's (1999a) findings on irony comprehension also support the assumptions of the graded salience hypothesis. They predicted that processing unconventional ironic sentences with salient literal meanings (e.g., *What a lovely day for a picnic*) would activate the literal meanings initially regardless of the context (literal or figurative), while the interpretation of conventional ironies (i.e., already coded in the mental lexicon) should activate both meanings during the initial processes of comprehension. The results of a word fragment completion task showed, as predicted, that the salient literal meanings are always processed in irony interpretation in both types of context, but the literal interpretation of ironic sentences does not entail the processing of the less salient ironic (figurative) meaning.

Laurent et al.'s (2006) research findings are consistent as well with Giora's graded salience hypothesis. They investigated the salience of familiar and predictable idioms presented out of context by recording ERPs²⁹ from 30 participants involved in reading and lexical decision tasks to (strongly/weakly) salient idioms and (figurative/literal) targets. The results showed that the faster response times were to figurative targets preceded by a highly salient idiom and for literal targets following a weakly salient idiom, i.e., the fastest response times were to the salient meanings only. These results are consistent with the graded salience hypothesis, indicating that the access to salient meanings is automatic, regardless of idiomaticity (or literality).

Summarizing, the graded salience hypothesis assumes that salience plays a key and decisive role in the initial processes of language comprehension (and production): "more salient meanings –coded meanings foremost on our mind due to conventionality, frequency, familiarity, or prototypicality- are accessed faster than and reach sufficient levels of activation before less salient ones" (Laurent et al., 2006, p. 151). Thus, salient (conventional, familiar, frequent and prototypical) meanings are accessed automatically, regardless of contextual information, and when unsuitable, they are rectified and adjusted to the context (and authorial intent) (Giora, 2003).

²⁹ ERPs stands for *event-related potentials* which "reflect activity patterns of neuronal generators [brain response] [...] evoked by transient sensory stimuli [...] ERP components are classically conceived as an electrophysiologic correlate of the underlying neuronal generators associated with information processes" (Kayser & Tenke, 2003, p. 2307).

1.9.3. Idiom production

“Idioms may be special in their relationships to nonlinguistic concepts, but they are not special in the way they are produced in normal language use.”

(Cutting & Bock, 1997, p. 69)

From accounts that consider idioms as long words represented as frozen lexical units in the mental lexicon (Bobrow & Bell, 1973; Swinney & Cutler, 1979), to compositional perspectives that assign the meanings of the constituent individual words of such expressions an important role in the comprehension of their overall figurative meaning (Cacciari & Glucksberg, 1991; Cacciari & Tabossi, 1988; Gibbs Jr & Nayak, 1989), psycholinguistic research on idiom comprehension has been vast and has provided significant evidence for both the holistic character *and* compositional nature of idioms. The need then emerges for a theory of idiom representation that solves the paradox and accounts for the holism of idiomatic expressions, acknowledging at the same time the role that the literal meanings of their constituent words play not only in their processing and interpretation, but in their production (Sprenger et al., 2006).

However, as Sprenger et al. (2006) point out, generalizing from idiom comprehension theories to an idiom production theory is not a straightforward move and should be done cautiously. In a communicative situation, the positions of both the speaker and the listener are different: while the speaker is certain about the particular message to be conveyed and departs from the corresponding conceptual representation to its production in speech, which can be interpreted either literally or not, the listener needs to figure out what is the speaker’s message and decide which one of these two interpretations is the appropriate one. Nevertheless, it is clear that

when using an idiom, the meanings of the words uttered by the speaker do not relate directly to the message conveyed in such expression, which may not even be susceptible to paraphrasing. On these grounds, Sprenger et al. (2006) suggest that idioms possess specific conceptual features, and support Levelt's (1989) assumption that idioms have their own lexical entry on the conceptual representations level. Idioms' conceptual representations must consist, thus, of their constituent words, their syntactic idiosyncrasies, and their idiomatic interpretation, and speakers must retrieve them from the mental lexicon as whole conceptual packages.

1.9.3.1. Hybrid Model of Idiom Production

Cutting and Bock (1997) claim that idioms are not produced as "frozen phrases" in which the individual words lose their syntactic and semantic information. They assert that idiom representations must keep certain information about their internal constituents such as phonological, semantic and syntactic information (which would account for the semantic productivity and syntactic flexibility of idioms) and, thus, they can be analyzed. Therefore, if idiomatic expressions are partially analyzable, blends between them would be similar to phrase blends rather than to word blends. Some anecdotal evidence of idiom blends is found in Stemberger's (1985) corpus of speech errors where a number of blends consisted of replacements of words similar in literal meaning. On these grounds and in order to explore the nature of idiom representation, Cutting and Bock (1997) performed three experiments using a speech-error elicitation task, focusing on idiom blends with the assumption that idiom errors might reveal relevant traits of idiom conceptual representations.

In experiment 1, participants read two idioms from a computer screen, and a short time later (2 s) they had to produce one or the other in response to a cue. Paired

idioms had the same or different idiomatic meaning and the same or different syntactic form. Results showed that the production of idioms with analogous figurative meanings was significantly slower than the production of idioms with different figurative meanings, which suggests the existence of an interference created by competing similar conceptual representations (Kuiper et al., 2007) delaying the process. Besides, idioms with the same syntactic structure were more likely to blend together than idioms with different syntactic forms. Notably, 93% of the substituted words belonged to the same grammatical class as the word they replaced. These findings are not consistent with the ‘unitization hypothesis’, which posits that idioms are produced as frozen multi-word lexical items, and suggest that idioms are syntactically analyzed.

In experiment 2, which followed the same procedure than experiment 1, they used four pairings of phrases: an idiomatic phrase and a literal phrase with the same meaning (*hold your tongue*; *grab your lip*), an idiomatic phrase and a phrase with different literal meaning (*hold your tongue*; *sign your name*), two idiomatic phrases with the same figurative meaning but different literal meanings (*hold your tongue*; *button your lip*), and two idiomatic phrases with different figurative and literal meanings (*hold your tongue*; *flip your lid*)³⁰. All phrases were syntactically alike. Results showed that pairs of phrases with the same meaning, whether it was figurative or literal, produced more blends than pairs of phrases with different meanings. This error-rates increase is held to be the result of the association between the lexical concepts. Also, the grammatical class constraint (more than half of the errors occurred on content words) held for both the literal and figurative conditions, suggesting that this constraint is blind to the (non) idiomaticity of the blending phrases. Cutting and

³⁰ Examples have been taken from the original source (Cutting & Bock, 1997, p. 63).

Bock (1997) conclude that these findings are evidence that the literal meanings are activated during the production of idiomatic expressions in discourse.

In experiment 3, Cutting and Bock explored the idiom decomposition hypothesis (Gibbs Jr & Nayak, 1989; Nunberg, 1978) which suggests that the lexical representation of semantically decomposable idioms is more syntactically flexible than that of nondecomposable idioms. They used pairs of idioms that had the same figurative meaning and syntactic structure, but differed in degree of compositionality, as determined from previous decomposability ratings, for instance: *line your pockets* – *feather your nest* (nondecomposable idiom pair), and *throw in the towel* – *give up the ship* (decomposable idiom pair). The procedure was again the same one used in the first two experiments. Even though the authors had predicted differences in the error rates between decomposable and nondecomposable pairs of idioms, the error rates were the same for both kinds of pairs suggesting that the lexical representations of decomposable and nondecomposable idioms are the same during the production process, and the constituent parts of both types of idioms are accessed in a similar way throughout production.

Cutting and Bock (1997) found that “across all three experiments, idiom blend errors consistently involved structurally and semantically similar components. Like literal phrases, idioms fall apart along linguistically sensible lines. Apparently, idioms are not lexicalized chunks, comparable to large single words, but phrases with internal syntactic and semantic components” (pp. 66-67). They propose that although every idiom has its own individual ‘lexical concept node’ and it is stored holistically on some processing level, idioms have also an internal structure constituted by their compositional simple lemmas that can function within a particular idiomatic framework, but also maintain their individual syntactic and semantic properties in

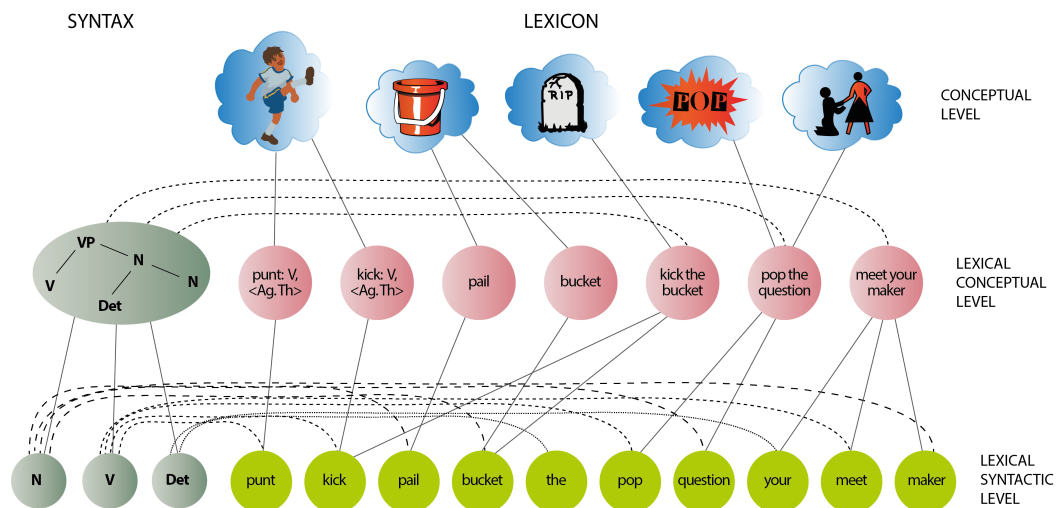
freely produced expressions. When an idiomatic lexical concept node is triggered, the lemmas that constitute the idiom get activated individually, but this activation also spreads to syntactic information in the form of a prefabricated multi-word expression stored as a whole. Moreover, many of the syntactic properties of the idioms have not been found to be different from those of single words (Jackendoff, 1995).

Kuiper et al. (2007) point out that Cutting and Bock's model provides a clear framework for the explanation of the processes involved in idiom production. This model assumes that although idioms are compositional, i.e., comprised by a set of syntactic and semantic constituents (single words), they are also represented as wholes in the mental lexicon by having their own lexical-concept nodes, which are associated with the corresponding syntactic representations. "In the case of idioms, the lexical-concept node is associated with a phrasal node (e.g., a verb phrase), not with a single grammatical category (e.g., a verb); the idiom thus retains structural information in its lexical representation. An idiom's lexical-concept node is also associated with lexical nodes that correspond to its component parts. Hence, the representation of an idiom like *kick the bucket* is associated with a phrasal node in the syntactic part of the system, as well as with the individual lexical entries *kick*, *the* and *bucket*" (Kuiper et al., 2007, p. 321). *Figure 6* depicts Cutting and Bock hybrid model for the activation of idioms.

In the opinion of Sprenger et al. (2006), Cutting and Bock's (1997) model of idiom production mirrors Cacciari and Tabossi's (1988) Configuration Hypothesis on idiom comprehension. These two accounts offer good possibilities for devising a model encompassing idiom production and comprehension that solves the paradox posed by the concurrently noncompositional and compositional nature of idioms, because under both schemes idioms can be unitary by having their own lexical entry,

and compositional because their components are simple lemmas stored in the mental lexicon, which always keep their word-like properties and can be used both idiomatically or literally, e.g., in novel language, as required.

Figure 6



Cutting and Bock's (1997) hybrid model of idiom representation.

However, Sprenger et al. (2006) claim that in Cutting and Bock's (1997) proposal of idioms represented as structural phrasal frames directly associated with their lexical concept node, the syntactic relationships and constraints that characterize an idiom are underspecified. After performing a series of experiments to test the assumptions of Cutting and Bock's hybrid model of idiom production, they present the *Superlemma Theory*, a theoretical extension of the hybrid model that introduces a superlemma activation node that binds together the constituent lemmas of an idiom to a single entry in the mental lexicon.

1.9.3.2. Superlemma Theory

Sprenger et al. (2006) argue that even though speech errors are a valuable tool for the study of language production, they cannot provide evidence that error-free language production occurs along the same activation channels. Therefore, they tested the predictions of Cutting and Bock's (1997) hybrid account of idiom production for error-free speech production in three experiments using a time course methodology. Furthermore, since Cutting and Bock's findings did not show any effect of decomposability on speech error rates, Sprenger et al. wanted to investigate the possibility that the literal meanings of the constituent words of idiomatic expressions were activated during idiom processing, so they also tested if idioms' decomposability affected the speech onset latencies.

In the first experiment, Sprenger et al. (2006) used a cued-recall task within a reaction time paradigm to test the two core assumptions of Cutting and Bock's (1997) model of idiom production: 1) Idioms are comprised of single words; 2) Idioms have their own conceptual entry in the mental lexicon which spreads activation to all its constituent parts. Participants had to produce idiomatic or literal phrases in response to a prompt word visually presented. In addition, an auditory prime consisting of a noun that was either identical with the noun of the target phrase or semantically and phonologically unrelated was presented simultaneously. Since priming activates the representation of a word and speeds up its access and production, it was expected that this would happen for both idiomatic and literal phrases in the case of identical primes. However, Sprenger et al. did not expect priming to have the same effect on idiomatic and literal phrases, and predicted a stronger effect in the case of idioms. They argued that hearing a word associated with an idiom, e.g., the lemma *road* for *hit the road*, would activate the lexical concept node of such idiom, resulting in the activation of

the associated lemmas and, thus, facilitating that idiom's retrieval, whereas hearing a word comprised in a literal phrase, e.g., *road* for *clean the road*, would not activate any common lexical entry, fact that would hinder the access to the remaining lemmas.

The results of experiment 1 supported these predictions. Priming occurred for both idiomatic and literal phrases, but the effect was stronger in the first case, suggesting that during production the individual constituents of an idiom are activated separately, and that because they are bound together by a common entry in the mental lexicon, the activation spreads to all of the constituent parts facilitating the idiom retrieval. "Fixed expressions and literal language only differ with respect to the *source* of word activation: while the words of a literal phrase are activated by their own lexical concepts, the words of a fixed expression will benefit from a common idiom node. Nevertheless, spreading activation from the word level to the concept level will lead to active literal word meanings in both cases" (Sprenger et al., 2006, p. 167).

In their second experiment, Sprenger et al. (2006) aimed to show that the production of an idiom can be primed by using words with similar meaning to one of the words comprised in such idiom, in order to support the hypothesis that idioms activate individual lemmas that are not unique to the idiom, and therefore an individual lemma can be activated from its own lexical entry in the mental lexicon or from the lexical concept node of the idiom in which it is contained (Kuiper et al., 2007). They used a cloze task where participants had to complete idiomatic expressions by producing their last word in response to visually presented stimuli which consisted of a fragment of the corresponding idiom. Acoustic prime words, either semantically or phonologically related, or unrelated to the target word, were

presented at different stimulus onset asynchronies, in relation to the display of the visual stimulus. Speech onset latencies were measured.

The results showed that participants were faster at producing the missing lemmas when the idioms were primed with a semantically or phonologically related word to the target word than when primed with an unrelated one. Furthermore, Sprenger et al. (2006) observed a general pattern of early semantic and later phonological effects. These findings on strong semantic priming effects on speech onset latencies for the production of idioms “support the assumption that the representation of an idiom activates simple lemmas that are lexical entries on their own. These simple lemmas are not special to the idiom, but are natural elements of the speaker’s lexicon” (Sprenger et al., 2006, p. 171).

In a third experiment, Sprenger et al. (2006) investigated whether the semantic links between prime words and idiom content words that were revealed in the second experiment are bidirectional, that is, if the activation also spreads from an idiom constituent individual word to its own conceptual representation. In other words, if the literal word meanings get activated during idiom production through their own semantic network. Participants producing an idiom with a cloze gap had to switch task and read out loud a visually presented word that was either semantically related or unrelated to the literal meaning of the target word. For instance, in the production of the idiom *skate on thin ice*, the preparation of the word *ice* as part of it will co-activate the semantically related word *freeze*.

As expected, the preparation of an idiom’s simple lemma worked as a prime for the production of a semantically related word. “Significant priming effects showed that even when used within the context of an idiom, individual words activate their own semantic network. That is, a speaker who produced the idiom *get out of hand*

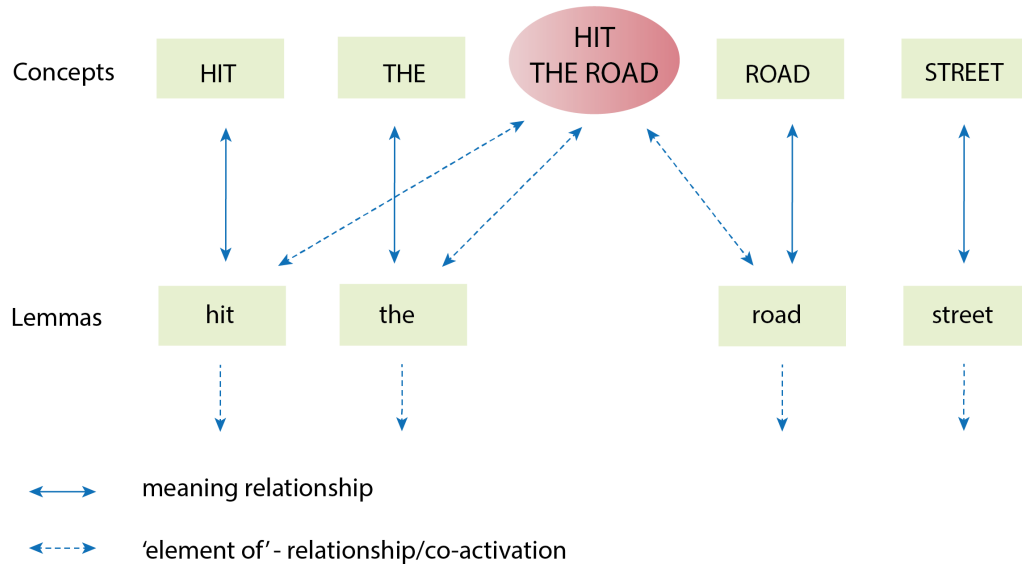
will also activate the literal word meaning of the word *hand*” (Kuiper et al., 2007, p. 323). Thus, the strong presence of a semantic effect provides evidence for the activation of literal word meanings during the production of idioms, supporting one of the core assumptions of Cutting and Bock’s (1997) hybrid model of idiom production.

Therefore, the results of all three experiments outlined above support Cutting and Bock’s (1997) account on the production of idioms. Together with Cutting and Bock’s speech error data, they provide strong empirical evidence that idioms are compositional and noncompositional at the same time, at different levels of processing. On this basis, Sprenger et al. (2006) highlights the compatibility between the hybrid model of idiom production and Cacciari and Tabossi’s (1988) configuration hypothesis of idiom comprehension. They remark the existence of robust findings on idiom processing that supports both theories and, consequently, a view in which both the lexical-conceptual and lexical-syntactic levels are shared between comprehension and production. According to Sprenger et al., this fact offers the possibility of a bidirectional model of language processing: a top-down (from lexical concepts to lemmas) production model, and a bottom-up (from lemmas to concepts) comprehension model.

However, Sprenger et al. (2006) argue that Cutting and Bock’s model is underspecified with regard to its syntactic processing assumptions (Kuiper et al., 2007). The fact that the hybrid model requires two different types of connections from the lemma level to the lexical-conceptual level that specify meaning relationship *and* allocation of one element to another (See *Figure 7*), implies that the processing mechanisms for idiomatic language and literal language are different.

Figure 7

Cutting & Bock's (1997) Hybrid Model in Sprenger, Levelt & Kempen (2006)

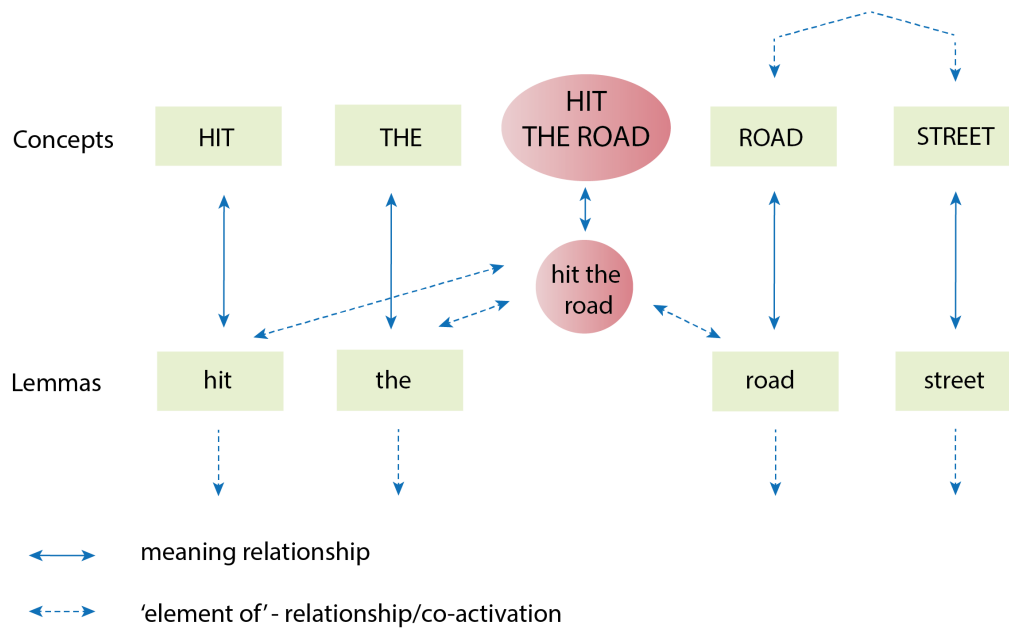


“Representation of the idiom *hit the road* in terms of the hybrid model, with two types of connections between the concept and the lemma level. The phrasal frame is not depicted (Sprenger et al., 2006, p. 176).

To resolve this contradiction, Sprenger et al. (2006) suggest introducing a *superlemma* which constitutes a separate representation of the idiom at the lexical-syntactic processing level. Thus, they present a theoretical extension of Cutting and Bock's hybrid model with a new model that introduces a superlemma activation node in speech processing that binds together the constituent lemmas, i.e., single words, of a phrasal lexical item in a single entry in the mental lexicon (See Figure 8). The superlemma constitutes a separate “representation of the syntactic properties of the idiom that is connected to its building blocks, the simple lemmas” (Sprenger et al., 2006, p. 176).

Figure 8

Sprenger, Levelt & Kempen's (2006) Superlemma Model

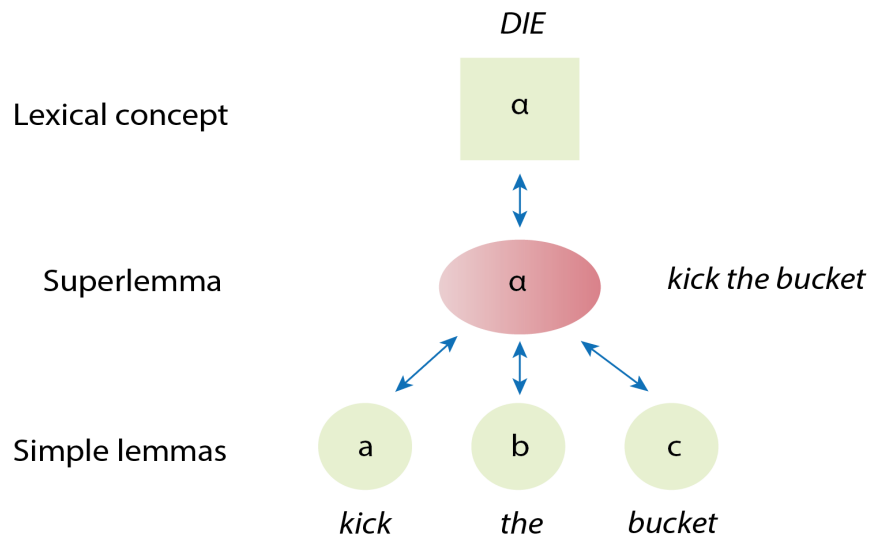


“Representation of the idiom *hit the road* according to the adapted hybrid model. The idiom is represented both at the concept level and the lemma level. All connections between processing levels denote the same relationship” (Sprenger et al., 2006, p. 176).

Therefore, Sprenger, Levelt and Kempen's model assumes that each idiomatic expression is represented in the mental lexicon by its own lemma: a superlemma that contains the syntactic properties of such expression. During the production of an idiom, the corresponding lexical concept will activate its superlemma, which in turn will activate the simple lemmas that are to be selected. For instance, the lexical concept **DIE** will activate the superlemma of the idiom *kick the bucket* (whose only one lexical-conceptual representation is **DIE**) containing all the syntactic information that becomes available during the production processes and will define the syntactic properties of the simple lemmas involved. These ones are fixated once the target superlemma has been selected (See Figure 9). If several superlemmas are activated by

the lexical concept, they will compete in the same manner that co-activated simple lemmas will do for their selection from the mental lexicon, according to Luce's ratio³¹ (Kuiper et al., 2007; Sprenger et al., 2006).

Figure 9



Diagrammatic representation of superlemma activation from Kuiper et al. (2007, p. 324).

The superlemma node accommodates all syntactic constraints of an idiomatic expression. It specifies the syntactic properties of the simple lemmas that constitute the idiom, and the syntactic relationships between them. “One may say that the task of the superlemma is to finetune the ‘lexical frames’ that are associated with individual lemmas” (Sprenger et al., 2006, p. 177). Thus, within the superlemma account the syntactic properties and constraints of an idiom are ascribed in a straightforward manner to the individual lemmas that are activated as part of an idiom, and no

³¹ “The probability of selecting the target superlemma from the mental lexicon is the ratio of the superlemma’s degree of activation and the total activation of all lemmas (superlemmas and simple lemmas) in the lexicon” (Sprenger et al., 2006, p. 177), which is known as Luce’s ratio.

additional syntactic operations are required. Moreover, from this perspective, both idiomatic and literal language involve the activation of the same processing mechanisms, consistent with the notion that the production of idioms does not involve different mechanisms than those ones involved in novel language production.

As Kuiper et al. (2007) point out, both accounts on idiom production, Cutting and Bock's (1997) hybrid model and Sprenger et al.'s (2006) superlemma model, agree that idioms are represented in the mental lexicon with their own lexical conceptual entry, which is connected with the set of individual lemmas comprised in the idiom. Furthermore, findings from both Cutting and Bock's research on idiom blends and Sprenger et al.'s study on idiom production within a time reaction paradigm support the assumption that idioms are both compositional and noncompositional at the same time, at different processing levels.

However, as Kuiper et al. (2007) also indicate, both models differ on the way they conceive of the syntactic representation of idioms. While Cutting and Bock propose that idiomatic concepts activate phrasal frames that are basically phrase structures with open slots to be filled with the individual lemmas that get activated by the idiom's lexical concept node, Sprenger et al. claim that in order to explain how the production system manages to insert the correct words in the corresponding slots even when these words share either semantic or syntactic features (as in the case of idioms containing two noun phrases), additional syntactic properties must be assumed.

Thus, Sprenger et al. extend Cutting and Bock's model of idiom representation and introduce the superlemma node, which contains the idiom's syntactic information pertaining to all the elements involved and solves this syntactic issue. Still, the superlemma approach is able to account for idiom blends (Cutting & Bock, 1997) that may arise when two superlemmas with similar semantic or syntactic structures are

activated simultaneously (Sprenger et al., 2006), or when two or more of the simple lemmas activated as part of the idiom have similar semantic, syntactic or phonological traits. The superlemma model solves the paradox that the holistic nature of idioms is not in conflict with their production by means of single words that retain their own conceptual meanings, and offers plausible grounds for the conception of “a model of the mental lexicon that serves both production and comprehension needs at the same time” (Kuiper et al., 2007, p. 325).

Other studies’ findings support a hybrid representation of idiomatic expressions and are compatible with the hybrid model and superlemma theory accounts. Holsinger’s (2013) eye-tracking study on the role of syntactic, lexical and contextual factors on the interpretation of idioms found evidence that literal processing is necessary for the retrieval of the idiomatic meaning, even under contextual bias.

Kuiper et al. (2007) tested both models of speech production, Cutting and Bock’s hybrid model and Sprenger et al.’s superlemma theory. They employed a deductive technique to analyze two datasets containing slips of the tongue naturally produced, the Tuggy dataset (English) and the Kempen dataset (Dutch), both of which comprise not only idiomatic expressions but also non-idiomatic restricted collocations. Kuiper et al. (2007) then searched for slips predicted to occur according to both accounts on idiom production, i.e., slips at the individual lemmas’ level (since the constituents of a multi-word expression get activated individually during formulaic language production), and slips at the superlemma level, which could result from the competition between two superlemmas, or between a superlemma and a lemma associated with related lexical concepts, or from the leak back from one of the constituent lemmas of the superlemma that activates a related lemma or a related superlemma.

Kuiper et al.'s (2007) findings confirmed the assumptions of Cutting and Bock's (1997) and Sprenger et al.'s (2006) hypotheses "in that PLIs [phrasal lexical items] are unitary at the point where a single lexical concept activates a superlemma and they are compositional at the point where a superlemma activates its constituent lemmas. The predictions of superlemma theory are borne out by the types of natural slips that are predicted to occur as a result of a set of activation patterns involving superlemmas. Such slips occur in considerable numbers" (Kuiper et al., 2007, p. 351).

Even though both models' predictions were tested and confirmed, Kuiper et al. remark on the fact that superlemma theory seems to make better predictions than Cutting and Bock's theory. But most interestingly, they indicate the viability of applying the superlemma theory to the linguistic processing of restricted collocations, which also appear to have their own lexical concepts and, thus, an associated superlemma representation, since the data analyzed showed that restricted collocations are subject to the same types of slips as idiomatic expressions. Moreover, most blends revealed by the data analysis occur among expressions with the same compositional property, i.e., idiom with idiom or restricted collocation with restricted collocation, which suggests that lexical concept nodes of multi-word expressions contain information regarding the compositionality (or noncompositionality) of their corresponding superlemmas.

Kuiper et al.'s (2007) findings also suggest that the processes of speech production may be the same for multi-word lexical items as for normal phrases, since the lexical constituents involved in both kinds of expressions are subject to the same predictable speech errors. This is consistent with Cutting and Bock's (1997) claim that "idioms may be special in their relationships to nonlinguistic concepts, but they are not special in the way they are produced in normal language use" (p. 69). "By

representing idioms with their own lemma [i.e., superlemma], idiom production follows the same rules of lexical competition and lexical selection as single words do” (Sprenger et al., 2006, p. 176).

1.10. Cloze Test Methodology

*“The ability to anticipate elements in sequence
is the foundation of all language skills.”*
(Oller Jr., 1971, p. 2)

The superlemma theory on language production, outlined in the preceding section of this work, and the account of lexical access, are central to this study since the key research instruments used to investigate the participants’ knowledge of certain idiomatic expressions were developed on the basis of its propositions. The construction of the research instruments used in the empirical part of this study followed the protocol of cloze test methodology³², which was the research methodology selected to test whether or not an idiom has been accessed from the phrasal lexicon of the participant. Cloze test is an experimental procedure that has been defined on a general level as “the systematic deletion of words from text” (Alderson, 1979a) and essentially requires the examinee to fill in the missing words in a text, i.e., access a single word lexical item, where the omitted item is indicated by a blank space.

³² It is important to note that in psycholinguistic research the dynamics of language processing are investigated using two different techniques that compliment each other: **on-line** techniques, which measure variables that tap into the processing of language in real time, i.e., as it happens, and **off-line** techniques that measure variables related to the outcomes of language processing (Garrod, 2006). Cloze test methodology is an off-line technique, and it was selected to measure the knowledge of some idioms by the participants in this research, in terms of the outcome of the acquisition process.

On these grounds, the activation of a phrasal item's lexical concept triggers the activation of its superlemma node, which in turn activates all its constituent lemma nodes that are related to that particular phrasal item's phonological, phonetic and graphic forms. This allows the respondents of a cloze test to access the absent word in their mental lexicon and produce it (Kuiper et al., 2009).

According to Brown (2002b), the cloze procedure was first used by Wilson Taylor (1953) who examined the usefulness of cloze testing methodology in the assessment of the readability of written materials used for children at schools in the United States. Subsequently, it became a useful research tool to assess reading proficiency among native speakers. Due to the ease of its construction, which entails a fast and economic method for measuring language proficiency, the cloze procedure was promptly adopted in both English as a Second Language and foreign language programs to assess overall proficiency (J. D. Brown, 1980). Cloze testing constitutes nowadays a common methodology widely used to assess language ability such as reading comprehension skills and second language proficiency (Abraham & Chapelle, 1992; Alderson, 1979a; Dörnyei & Katona, 1992; Kobayashi, 2002; Schmitt, Dörnyei, et al., 2004).

1.10.1. Reliability and validity of cloze procedure

It has been suggested that cloze procedure is frequently used as a major language tool not only because it is easy to construct and run, but also because it entails high reliability and validity (Katona & Dörnyei, 1993). In simple terms, reliability refers to the consistency of the test, i.e., the extent to which the scores remain stable from administration to administration, and it is estimated using a variety of procedures such as test-retest (by computing the correlation between the set of

scores of a test administered twice), equivalent form (through the calculation of the correlation between the set of scores obtained through the administration of two forms of a test), and internal consistency reliability, i.e., “the interrelatedness of a set of items” (by obtaining a reliability estimate of a test administered one single time using an internal consistency equation such as one of the Kuder-Richardson procedures or the Cronbach’s alpha test) (J. D. Brown, 1980, 2002a).

On the other hand, validity is an estimate that deals with the extent to which an instrument measures what it is intended to measure (J. D. Brown, 1980), or as Messick (1989) asserts, it “refers to the degree to which empirical evidence and theoretical rationales support the adequacy and appropriateness of interpretations and actions based on test scores” (Messick, 1989, p. 13). Validity is closely associated with the reliability of an instrument since an instrument cannot be valid if it is not reliable. Nevertheless, the reliability of an instrument does not depend on its validity (Nunnally & Bernstein, 1994). According to Brown (1980), cloze test validity is usually estimated using criterion related validity which is a measure expressed in a correlation coefficient obtained from the comparison of the scores of the test in question and the scores of a recognized standard test.

It is important to mention that the research on the reliability and validity of the cloze procedure is rather inconclusive to date (J. D. Brown, 2002b), and that the values of reliability and validity reported in several studies are considerably varied. Reliability estimates found in the cloze test literature range from very weak (31%) to very strong (96%) (J. D. Brown, 1993b). Brown (1998) posits three factors that, in his opinion, considerably affect the reliability of cloze tests: “(a) variations in student ability levels and score ranges, (b) differences in passage difficulties, and (c) changes in number of items” (J. D. Brown, 1998, p. 18).

As for validity, scholars largely disagree as to what it is that cloze tests really measure. Some researchers (Alderson, 1979b, 1980; Markam, 1985) maintain that a cloze procedure can only measure lower-order linguistic skills since “cloze test items are primarily tapping students’ abilities to manipulate linguistic elements at the clause or sentence level, as opposed to predominately focusing on inter-sentential elements” (J. D. Brown, 2002b, p. 80). Alderson (1979b) argues that the action of restoring words to context involves syntactic processes mainly at the clause level and does not reflect the activation of higher-order cognitive processes. He claims that some evidence shows that, in general, the cloze procedure works better to test grammar and vocabulary than reading comprehension skills.

In contrast, other scholars argue that cloze tests can be effectively used to measure higher-order language skills – cohesion and coherence - by testing students’ linguistic abilities at the inter-sentential level (Bachman, 1982, 1985; J. D. Brown, 1983; Jonz, 1987, 1990). Therefore, according to some, the cloze procedure constitutes an effective tool to assess reading comprehension abilities, as well as grammar and vocabulary. All in all, the validity correlation coefficients found in the literature indicating how cloze tests are related to the proficiency criterion measures of other standard tests of English as a second language vary from very weak (19%) to fairly strong (83%) (J. D. Brown, 1993b).

It has been proposed that this variability in research findings across studies is due to a number of factors other than the language ability of test takers (Kobayashi, 2002). Among the factors that have been observed to contribute to test performance are constituent traits of the test such as difficulty of test items determined by the subject matter, nature and number of deleted words, deletion ratio, amount of context provided and answer mode. These factors are all interrelated and it is the dynamic

between them which determines the nature of the test, and the consequent results. Scoring methods also represent an important contribution to the variability of results that have been found in cloze procedure research (Abraham & Chapelle, 1992; Alderson, 1979a; J. D. Brown, 1980, 1998, 2002b; Kobayashi, 2002).

1.10.2. Difficulty of cloze testing

Abraham and Chapelle (1992) argue that an intrinsic factor of difficulty are the basic cognitive processes that test takers require in performing the cloze task, such as the “psycholinguistic processes involved in reading comprehension [and] retrieving vocabulary from long-term memory (or from other parts of the text) on the basis of semantic and syntactic clues” (Abraham & Chapelle, 1992, p. 470). Thus, the cognitive processes that lie behind the syntactic or semantic information required to restore either function words (i.e., articles, pronouns, relative pronouns, etc.) or content words (i.e., verbs, nouns, adjectives, and adverbs) may explain item difficulty.

On this foundation, and supported by other research findings (J. D. Brown, 1988; Klein-Braley, 1981; Kobayashi, 2002), Abraham and Chapelle (1992) propose that content words are more difficult to restore than function words. Kobayashi’s (2002) findings replicate Abraham and Chapelle’s (1992) results: function words were found to be easier to restore than content words. Kobayashi (2002) argues that “content words convey meanings, and each individual meaning contributes to a complicated semantic network in the text. At the same time, the meaning also acts on the readers’ schemata” (Kobayashi, 2002, p. 581). Therefore, examinees require more integrative ability to retrieve content words than for the retrieval of function words.

Other factors that have been observed to contribute to item difficulty are the number of syllables in the sentence where the item is contained, and the incidence of

the item in the whole text (Abraham & Chapelle, 1992; Finn, 1978). For instance, Finn (1978) argues that low frequency content words that are repeated throughout the cloze passage are easier to restore than expected because they are closely associated with the text. Abraham and Chapelle (1992) also suggest that the nature of the required response represents another difficulty factor: constructed responses are more difficult than selected responses.

On the other hand, according to Abraham and Chapelle (1992), an important determinant of cloze item difficulty is the contextual factor, which entails the amount of context required to recall the item. Evidence shows that the amount of context required to produce the correct word is positively correlated with the difficulty of the item, i.e., the larger the amount of context required to restore the missing word, the more difficult the item becomes (Bachman, 1985; Bensoussan & Ramraz, 1984). Kobayashi (2002) also found that the smaller the context required for the restoration of an item, the easier this item becomes. In relation to this, Kobayashi (2002) notes that the restoration of content words seems to require a larger amount of context than that one needed to restore function words.

The deletion procedure followed in the construction of a cloze test has also significant implications in the nature of what the test actually measures and its difficulty. Deletion rate of words can be pseudo-random (it is never totally random³³); rational, according to a particular criteria depending on what it is being measured; or fixed-ratio deletion, a process that follows a specific frequency, for instance, the deletion of every fifth word from text (Alderson, 1979a), or every fifth to tenth word (Katona & Dörnyei, 1993).

³³ The deletion of certain words would cause the loss of context, an important element for test takers to consider when filling a blank.

There seems to exist some agreement among scholars that not all deletions in the same cloze test measure the same linguistic abilities (Alderson, 1979a, 1980; Bachman, 1985; J. D. Brown, 2002b). According to Alderson (1979a, 1980), the clausal and textual functions of the words deleted following a fixed-ratio criterion will not be the same in different texts. Therefore, it cannot be assumed that two different cloze tests can measure the same linguistic skills because of the diversity of words, syntactic patterns and other discourse features that characterize different texts. From this point of view, fixed-ratio word deletion generates tests that largely vary in content, and measure completely different things. In addition, Alderson (1979a) suggested that the deletion of words following a fixed-ratio procedure results in tests that can only measure lower-order linguistic abilities.

Bachman's (1982) findings revealed that cloze scores can reflect higher-order language processing if a rational deletion procedure is used. He constructed a cloze test using rational deletion of syntactic and cohesive words in an intact passage, and administered it to two groups of non-native English speaking university students. Bachman (1982) used confirmatory factor analysis and found that deletion types that required context at inter-sentential level for closure loaded on different factors than the factors corresponding to deletions whose restoration relied only on the context at the clause-level. Bachman (1982) concluded that cloze procedure is effective at measuring higher-order skills if rational deletion is used. He argues that random deletion bears inconsistent results because this procedure disregards the syntactic and semantic relationships in a text. Random deletion can, thus, result in sampling a large proportion of 'clause-bound' words and appear to measure only lower-order linguistic abilities (Bachman, 1982, p. 66).

In another study, Bachman (1985) prepared two cloze tests out of the same text but using different deletion ratios. One test was made using a rational ratio procedure by providing the syntactic and discourse context considered as needed for closure, whereas the other one was constructed using a fixed-ratio deletion method. The tests were administered to four groups of students at the University of Illinois, Urbana-Champaign, three of them comprised of non-native speakers of English with different levels of language proficiency, and one of native English speakers. The examination of the answers to both tests suggested that the items of the test with fixed-ratio deletion were considerably more difficult than the items in the test prepared following a rational ratio criterion.

1.10.3. Scoring methods

The relationship between cloze items attributes and scoring methods has been proved to be rather complex. Cloze item complexity varies depending on the kind of words deleted. Thus, it is essential to understand the nature of the words being tested in a cloze test in order to envisage with more clarity what each item measures (Kobayashi, 2002) and, therefore, how to assess it. Therefore, an objective scoring method is needed for the results to be accurate and interpreted in an unbiased manner. Within a theoretical framework of test validity, it is of vital importance to understand the meanings of cloze test scores to justify their interpretation and the actions based on the results (Abraham & Chapelle, 1992).

The most popular methods developed for scoring cloze tests are the exact-answer (EX) method and the acceptable-answer (AC) method, although two other methods, clozentropy (CLZNT) and multiple-choice (MC), have also been employed (J. D. Brown, 1980). The EX scoring method requires the test taker to complete the

blank with exactly the same word that was originally deleted from the test, whereas the AC method counts as correct any contextually acceptable answer. The CLZNT scoring method is a modification of the AC method, which generates logarithmical values for acceptable answers based on their frequency as per a pre-test completed by a native speaker. Finally, the MC method provides the alternative answers from which the test taker needs to select the correct one. However, while the latter seems to test only receptive skills, the EX, AC and CLZNT methods assess receptive and productive skills (J. D. Brown, 1980).

It has been argued that the AC method is more appropriate than the EX method to assess ESL students' proficiency (Bachman, 1982; J. D. Brown, 1980; Kobayashi, 2002; Oller Jr., 1972). The EX method simplifies the examiners' marking criteria, but in some cases is hard to justify and increases the difficulty of the test (Dörnyei & Katona, 1992). Some research findings show that when the semantically acceptable scoring method is used, the performance of high-level proficiency non-native speakers of English is comparable to that of native English speakers on both syntactic and cohesive cloze items, whereas the low-level proficiency non-native speakers' performance is considerably poorer (Alderson, 1980; Bachman, 1982).

These results make sense since it seems fair to count as correct an answer that is semantically and/or syntactically acceptable within the context. Brown (1980) compared the scores of a cloze test adapted for the use of the four different scoring procedures mentioned above. Results revealed differences between the four methods in reliability, mean item facility, discrimination (i.e., the extent to which an item separates the high proficiency students from the low proficiency ones) and usability (ease and costs of construction, administration and scoring), but no significant differences in validity. From his findings, Brown (1980) assigned values to each of

these variables for the scoring methods investigated and concluded that, overall, AC is the best scoring method, even though it represents more work for the examiner than the EX method.

In the same line, Kobayashi's (2002) findings disclosed variations in the results of cloze tests due to the use of three different scoring methods: (a) The exact word scoring method; (b) The semantically and syntactically acceptable word scoring method; and (c) The semantically acceptable, but syntactically unacceptable word scoring method. The two semantically acceptable-word scoring methods produced higher results' means. This suggested that high proficiency second language students might unjustly attain low results using the exact-word scoring method on the assumption that greater language proficiency enables students to think of fitting words that, without being the expected ones, make sense in the context. Therefore, Kobayashi (2002) suggests that if it is reading comprehension ability what the cloze test is measuring, examiners should as well establish some sort of criteria where syntactically incorrect answers are accepted if they show that the test taker has understood the meaning of the reading. However, as Brown (1980) points out, "the final decision on which scoring method to employ must rest with the developer / user, who best knows the purpose of the test, as well as all of the other considerations involved in the particular testing situation" (J. D. Brown, 1980, p. 316).

In sum, notwithstanding other scholars' arguments maintaining that "the cloze procedure for deriving tests of language comprehension [is] a procedure so uncomplicated that it can be accomplished easily by anyone with a photocopier and a bottle of correction fluid" (Jonz, 1990, p. 72), a sensible assumption is that the construction of a sound cloze test requires the intervention of the tester/researcher. As

Brown (1993b) notes, “a cloze test is not necessarily and automatically a sound overall ESL/EFL proficiency measure” (J. D. Brown, 1993b, p. 110). It seems that the key point to creating a proper cloze test is to select a suitable text, to develop an appropriate rational deletion criteria for the specific assessing purposes (Bachman, 1985), and to use the scoring method that best suits the aims of the test, in terms of what it is being measured (J. D. Brown, 1998).

However, since this task is essentially dependent on a series of judgments, often rather subjective, test makers need to be aware of the factors previously discussed when designing, administering and scoring a cloze instrument. Furthermore, caution is needed when interpreting the results of a cloze test to prevent ambiguity on what it is actually being measured (Dörnyei & Katona, 1992). Therefore, some aspects of this methodology were carefully pondered before designing the cloze instruments administered in this research.

Having examined cloze testing, the research methodology used in the present investigation, the following section reviews the role that corpus analysis has played in the research of phrasal vocabulary, specifically with a view to understanding the use that was made of data taken from corpora in the experimental design of this study.

1.11. Corpora Exploration of Formulaic Sequences

Corpus study has proved to be a useful tool for identifying formulaic language, and describing how it is used in spoken and written discourse. As Sinclair (1991) noted, “the language looks rather different when you look a lot of it at once” (Sinclair,

1991, p. 100)³⁴. The examination of large corpora is an empirical approach to linguistic research that has constituted an important source of information for the study of formulaic language (Corpas Pastor, 2003; Read & Nation, 2004; Ruiz Gurillo, 1995; Schmitt, Grandage, & Adolphs, 2004; Stubbs, 2009; Wray, 2002).

According to Stubbs, (2009) the ‘British tradition of empirical text analysis’ (Stubbs, 2009, p. 116) started with John R. Firth and Michael A. K. Halliday, among others, but it was John Sinclair (1987, 1991, 1996, 2004) who took corpus linguistics to a higher level by developing the most radical implications. Sinclair’s main statement is that multi-word units of meaning can be discovered through the search for patterning in large text collections. His research in the 1980s and 1990s of language patterns in machine-readable corpora of hundreds of millions of running words resulted in his theory of phraseology, which has had significant implications in the description and the pedagogy of language (Stubbs, 2009).

Corpus-assisted search methodology was rather constrained in its earlier days due to the limited availability of data and the lack of appropriate searching tools, but computer technology advances in the last few decades rapidly changed the scene. Sinclair (1991) describes this fast transition by writing: “Thirty years ago when this research started it was considered impossible to process texts of several million words in length. Twenty years ago it was considered marginally possible but lunatic. Ten years ago it was considered quite possible but still lunatic. Today is very popular” (Sinclair, 1991, p. 1). Therefore, corpus linguistics, which “is essentially descriptive linguistics aided by new technology” (Kennedy, 1998, p. 268), has become a prevalent practice in language research, with computer-based corpus analyses

³⁴ However, it should be kept in mind that language corpora do not represent the language itself in all its aspects and its nuances but only examples of its use. One should always be aware of the distinction between linguistic competence and the outcome of linguistic performance (Kuiper, personal communication).

generating essential information not only on the existence of words but also on their use and patterns of distribution (Sinclair, 1991).

1.11.1. Advantages of corpus analysis

Corpus linguistics represents a relatively new approach to the study of language that allows for a more fine-tuned detection and analysis of a variety of multi-word lexical items in large corpora, and it has a wide range of applications (Anderson, 2003). Corpus-assisted search methodology enables researchers to search large amounts of text systematically, and yields empirical evidence for the nature and prevalence of recurrent patterns in the language. It also generates valuable information on the relation between word-forms, lemmas and grammar (Stubbs, 2009). Hence, corpus analysis not only allows linguists to produce frequency counts and other quantitative measures of word strings, but also provides important information for the execution of qualitative analyses of formulaic sequences (Read & Nation, 2004; Schmitt, Grandage, et al., 2004).

Furthermore, corpus research has been a valuable tool in lexicography and has permitted the compilation of major language dictionaries of phrasal vocabulary (Corpas Pastor, 2003; Schmitt, Grandage, et al., 2004). Computer searches are being increasingly performed within spoken and written corpora to locate strings of words, which, according to their recurrent character may be categorized as formulaic sequences (Moon, 1998; Wray, 2002). Thus, corpus software can assist in identifying expressions that are potentially formulaic in the opinion of the investigator, for their further examination (Read & Nation, 2004) and inclusion in lexicographic materials.

The implementation of corpus research has revealed that the speakers' intuitions on their own language are not always accurate, and that methods of

introspective analysis often produce descriptions that do not match the reality of textual usage of formulaic sequences (Corpas Pastor, 2003; Sinclair, 1991). Therefore, although it is expected that the subjectivity factor will be present to some extent when making decisions on the search methods, and on the identification and categorization of the different language patterns in the corpora³⁵, corpus data provide researchers with a certain degree of objectivity that replaces the speculative criteria previously used in the study of the nature and uses of language (Adam Kilgarriff, 1997, in Stubbs, 2009).

With regard to the definition of corpus, “in principle, any collection of more than one text can be called a corpus” (McEnery & Wilson, 1996, cited in Kilgarriff & Grefenstette, 2003, p. 333). However, with the advances in computer technology, the meaning of this term has evolved and it “is now generally understood to mean a sample of naturally-occurring language, usually in machine-readable form and often designed to be representative of a language, or a language variety, such as particular register, genre, mode and so on” (Anderson, 2003, p. 117). As for the scope required for a corpus to be representative, Anderson (2003) observes that size is not all that counts. She claims that even though there is an inclination to carry out corpus-based language research using large corpora with hundreds of millions of running words³⁶, the design of a corpus should mainly be determined by the investigator, based on the purposes of the research, allowing for smaller and more specific corpora (i.e., individual genres, child language, etc.).

³⁵ It has been claimed that the collocational patterns in a text are less obvious than single lexical items or grammatical constructions (Anderson, 2003).

³⁶ Such as the British National Corpus (BNC) that has 100 million words, or the Bank of English containing 415 million words.

On the other hand, there has been a recent tendency to use the web as a corpus. In Kilgarriff and Grefenstette's (2003) words: "The web, teeming as it is with language data, of all manner of varieties and languages, in vast quantity and freely available, is a fabulous linguists' playground [...] The web is immense, free and available by mouse-click. It contains hundreds of billions of words of text and can be used for all manner of language research" (Adam Kilgarriff & Grefenstette, 2003, p. 333). Kilgarriff and Grefenstette (2003) argue that the performance of probabilistic models of language improves when they are based on large quantities of data, even if these data are noisy. According to New et al. (2004), while the standard frequency is derived from the number of times that a word is found in a text as a function of the total number of lexical items in the corpus, web frequencies are established based on the number of pages that contain a particular word as a function of the total number of web pages. The authors maintain that "frequencies based on Web pages are interesting because (1) Web pages are more dynamic than corpora of texts since Web pages are easily published; (2) Web pages exist for nearly all human activities, whereas a corpus is usually limited to literary texts; (3) Web pages are updated very regularly' and (4) Web pages in a particular language constitute a vast corpus" (New et al., 2004), p. 517).

Another advantage of using the web as a corpus is its multilingual accessibility. In Xu's (2000) calculations, 71% of the web pages were written in English (453 million out of 634 million web pages indexed by the Excite engine at that time), followed by Japanese (6.8%), German (5.1%), French (1.8%), Chinese (1.5%), Spanish (1.1%), Italian (0.9%), and Swedish (0.7%) (Xu, 2000, in Kilgarriff and Grefenstette, p. 337). In addition, web-measured counts of words and phrases have been compared with counts of large and well-known standard corpora such as

the BNC English corpus, and it has been found that the numbers yielded by the search engines are extraordinarily higher³⁷, a fact that is indicative of the colossal size of the corpus available in the web (Adam Kilgarrieff & Grefenstette, 2003).

Some scholars argue that although using the web as a corpus for language research has some advantages like its large size and the presence of a variety of unpublished materials, it has significant disadvantages such as the written nature of most of its texts, and the complexity of determining size or proportions (Stubbs, 2000, cited in Anderson, 2003). In addition, it has been suggested that the incidence of language errors in the web-based texts that have been produced, in many instances, with little concern for correctness (as opposed to edited published texts), could represent a hindrance for research. However, Kilgarrieff and Grefenstette (2003) argue that the “erroneous” forms are much less than the “correct” forms, and claim that “the web is a dirty corpus, but expected usage is much more frequent than what might [be] considered as noise” (Adam Kilgarrieff & Grefenstette, 2003, p. 341).³⁸

While some corpus work has been accomplished in the Spanish and French languages, it has been suggested that the main focus of corpus linguistics has been the English language, a fact that may be due to the long history of Anglo-Saxon corpus-based descriptive linguistics (Anderson, 2003). Ruiz Gurillo (2001) claims that corpus research on phrasal vocabulary in Spanish is not extensive. A few studies like the one carried out by Ruiz Gurillo (1995) where she explored the frequency of prepositional phrases³⁹ within a corpus of colloquial spoken discourse in Spanish, and observed one

³⁷ For instance, the phrase *deep breath* appears 732 times in the BNC that contains 100 million words, whereas it was indexed 54,550 times in 1998 and 170,921 in 2001 by Altavista search engine; and 868,631 times in 2003 by Alltheweb search engine (Adam Kilgarrieff & Grefenstette, 2003).

³⁸ On a Google search, the phrase “I beleave” produced 3,910 hits, and “I beleive” 70,900 hits, whereas the correct form “I believe” appeared on more than 4 million pages (Adam Kilgarrieff & Grefenstette, 2003).

³⁹ *Sintagmas prepositivos fraseológicos.*

occurrence per minute of conversation, and Corpas Pastor's (2003) study that investigated the frequency of 100 *paremias*, i.e., proverbs, selected randomly, in the CVB corpus of peninsular Spanish⁴⁰ and found 79 of them in 166 occurrences, with a mean of 2.10, are some examples.

As for French, Anderson (2003) states that French corpus linguistics "is somewhat behind English in the field" (Anderson, 2003, p. 127). Her doctoral research based on a corpus analysis of phraseology in the register of current European Union administrative French is one of such works using corpus linguistics methodology in the French language.

1.11.2. Problems of corpus analysis

Given the central role that frequency plays in language processing, computer searches in corpora to detect frequent patterns of word associations seem to be a sensible way to identify relevant sequences of words, whose high recurrence indicate their likelihood of being holistically stored in the mental lexicon of the speaker, and retrieved in such a manner when needed (Wray, 2002). The documentation of these sequences of words, i.e., formulaic sequences, should not be difficult, since "their normality is a function of their occurrence as holistic units. So it becomes a relatively straightforward matter to list them as an inventory" (Widdowson, 1990, p. 92; cited in Wray, 2002, p.25). To the extent that this were possible, it would represent an important contribution not only to the understanding of the acquisition of formulaic language by L1 speakers, but also to the pedagogy of formulaic language, since it would largely facilitate the identification of relevant multi-word expressions to be included in L2 teaching programs.

⁴⁰ The CVB (*corpus Vox-Bibliograf*) is a ten-million word corpus of peninsular Spanish constituted by a variety of texts published from 1950 to present.

However, Wray (2002) identifies some problems that prevent the resulting frequency counts of formulaic expressions in corpora from being as useful as desired, such as the inevitable subjectivity of the researchers' criteria applied in the selection of the expressions of interest. She argues that the establishment of the length of multi-word expressions and the frequency thresholds is basically arbitrary. According to Wray (2002), these subjectivity factors are evident in the enormous disagreement existent on what it is important and how to recognize it.

Another limitation of computer-based corpus analysis is the restricted capability of computer searching tools to delimit the lexical borders of formulaic strings of words, and to differentiate between the nature of recurring groups of words with the same configuration that may be formulaic or novel, depending on the context (Wray, 2002). Therefore, frequency measures are unable to discriminate between the formulaic and novel nature of identical strings of words. Proof of this is the number of different frequency and association ratio measures that have been proposed for multi-word expressions explored through corpus research (Read & Nation, 2004; Wray, 2002).

One more problem recognized for frequency count measures is the size of the corpora (Wray & Perkins, 2000). Small size corpora may not contain, in many cases, some common but less frequent strings of words. Moreover, a number of deep-rooted fixed expressions that are undoubtedly familiar to the members of a particular speech community have not been found at all even in mega-corpora studies (Corpas Pastor, 2003; Read & Nation, 2004). Thus, frequency is relative to the corpus one is searching and is not always an essential trait of formulaic language (Corpas Pastor, 2003; Wray & Perkins, 2000).

An additional problem in identifying formulaic sequences in corpora searches relates to the level of variability or flexibility of such sequences. Schmitt & Carter (2004) mention that whereas formulaic expressions constituted by fixed elements can be identified with more ease, flexible sequences, which besides their fixed components have slots that may be filled in with a range of words according to the particular situation, are difficult to uncover using current computer software, even though these expressions may be more frequent than the fixed ones. Similarly, there are sequences whose elements are located so far away from each other within the discourse that cannot be easily identified by corpus software (Corpas Pastor, 2003).

Schmitt, Grandage and Adolphs (2004) investigated if recurrent clusters identified through corpus research and inserted in a psycholinguistic language task were stored as whole units or not in the mind of the participants. The results of their study, which used a dictation methodology and an oral-response reproduction task of 25 recurrent clusters identified through corpus analysis, suggest that corpus data is not a reliable indicator on whether recurrent clusters of words are stored as wholes in the mental lexicon. Even though “there seems to have been an unspoken assumption that corpus data is somehow psycholinguistically valid, and in many senses this must be true because the language in corpora has been produced by people using language and so must reflect language competence to some extent” (Schmitt, Grandage, et al., 2004, p. 147), other approaches to psycholinguistic research should complement corpus-based research in the pursuit of a better understanding of language processing and use. Schmitt et al. (2004) concluded that dependence solely on corpus data would not provide a reliable indication of formulaicity, as recurrent clusters are not necessarily stored holistically in the mind.

Wolter and Gyllstad (2013) claim that “it would be foolish to assume that any corpus, no matter how large and how divergent its sources, could ever precisely replicate a given language user’s experience with the target language” (Wolter & Gyllstad, 2013, p. 457). A speaker’s language experiences are largely individualized as a result of the influence of many factors such as education, dialectical issues, background, personal activities and interests. However, the utility of corpus-based research has been endorsed by many investigators who claim that a corpus can deliver significant and valid information about the linguistic input language users are exposed to, if it is adequately large and representative (Wolter & Gyllstad, 2013). Therefore, carefully analyzed corpus data may be very useful in lexical items’ frequency searches.

All in all, corpora examination through computer software constitutes a valuable source of information on various aspects of formulaic sequences in a particular language. Corpus linguistics has become an essential component of considerable amount of linguistic research, with many language scholars integrating computer-based corpus analyses in their studies on the nature, processing and use of formulaic language. Nevertheless, further manual analyses must be carried out to discard inadequate associations of words that the search tools cannot properly identify, and care should be taken when making intuitive decisions to decide the relevance of the different lexical patterns (Corpas Pastor, 2003; Read & Nation, 2004; Wray, 2002).

Finally, as Sinclair (1991) claims, “the results are only as good as the corpus” (Sinclair, 1991, p. 9). Therefore, for the purposes of the present study, the researcher attempted to make a sensible use of the information in some lexical databases, as well as in large web corpora, all of which are cited in the Method chapter of this work.

RESEARCH RATIONALE

1.12. Research Rationale

The research literature that has been outlined in the previous sections of this work makes it clear that a large part of human language production comprises what has been called formulaic language. As has been noted, formulaic language, or phrasal vocabulary, is a multifaceted phenomenon and it is not possible to describe it on the grounds of a single criterion. Moreover, some confusion often arises with definitions that attempt to be comprehensive but fail to include the two empirical domains that the term formulaic language entails. Therefore, formulaic language might be more comprehensively defined as the cover term for two quite different areas: 1) The empirical domain of the phrasal lexicon, i.e., the speaker's mental repertoire of phrasal lexical items, and 2) The empirical domain that deals with the performance of the speaker in the use of these phrasal lexical items in speech and writing (Kuiper, to appear).

It has been emphasized that phrasal lexical items, known also as formulaic sequences or formulaic expressions (among other terms), are multi-word expressions that appear to be 'prefabricated' and stored as such, or a template of them, in the mental lexicon of the speaker. When engaged in the production of speech, this capacity gives people rapid access to these 'chunks' of information that have been 'pre-packaged' into single units in their mental lexicon, thus increasing the proficiency of verbal communication. Formulaicity constitutes an important trait of language production from the perspective of both the speaker and the listener, and plays a central role in everyday language usage (Jackendoff, 1995; Kuiper et al., 2009; Pawley & Syder, 1983; Schmitt & Carter, 2004; Sinclair, 1987, 1991, 1996;

Sprenger et al., 2006; Van Lancker-Sidtis & Rallon, 2004; Wray, 2002; Wray & Perkins, 2000).

It has also been noted that the study of phrasal vocabulary has concentrated on its detection and description, rather than into the mechanisms of its acquisition. Research on the latter has focused on longitudinal accounts of language development, rather than in the investigation of the processes that explain how language users acquire and store formulaic language. Kuiper et al. (2009) indicate that despite the development of a number of models of formulaic language acquisition, there is not yet an account that explains the means by which people acquire phrasal vocabulary in the first instance.

In addition, research evidence shows that second language speakers have great difficulties learning and using nativelike formulaic language. It appears that non-native speakers focus more on single words than on sequences of words, and only a few of them acquire a collection of formulaic sequences that is comparable to that of native speakers (Kuiper et al., 2009; Pawley & Syder, 1983).

A final and important consideration on the matter of formulaic language is that formulaicity is not restricted to English but is ubiquitous in human languages. For instance, studies have shown the likelihood of establishing the same general criteria when exploring formulaicity in the English and Spanish languages, and possibly in other Germanic and Romance languages such as French (Corpas Pastor, 1995, 1996, 2003).

All the considerations expressed above on the importance of formulaic language in human communication, and on the gaps in the knowledge of the mechanisms of its acquisition by both native and non-native speakers, are the foundations of this empirical research. Therefore, the main purpose of the present

study is to investigate the mastery of formulaic expressions by native and non-native speakers of three main Western languages: Spanish, English and French. However, before entering into a more detailed description of this research and its main propositions, it is important to outline the empirical research where this investigation originated.

1.12.1. The original study: *Acquiring Phrasal Vocabulary*

In the first study of its kind, Kuiper et al. (2009) carried out an investigation in order to explore when native speakers of English learn formulaic expressions, what are the differences between native and non-native speakers in their acquisition, and, most importantly, what are the links between the frequency of usage of the head-verbs of verb phrase formulaic language items and the mastery of such items by both native and non-native speakers of English.

In the study, native speakers of English were all New Zealanders assigned to four different groups of ten: 16 ± 1 years of age, between 20 and 30, between 40 and 50, and over 65. Education ranged from high school students to University degrees. Non-native speakers were constituted by two groups: ten German secondary students aged around 16 years of age who had been studying English at a secondary school, and a group of adults over 20 years old who were native speakers of a variety of languages other than English. Neither gender nor socio-economic status were controlled.

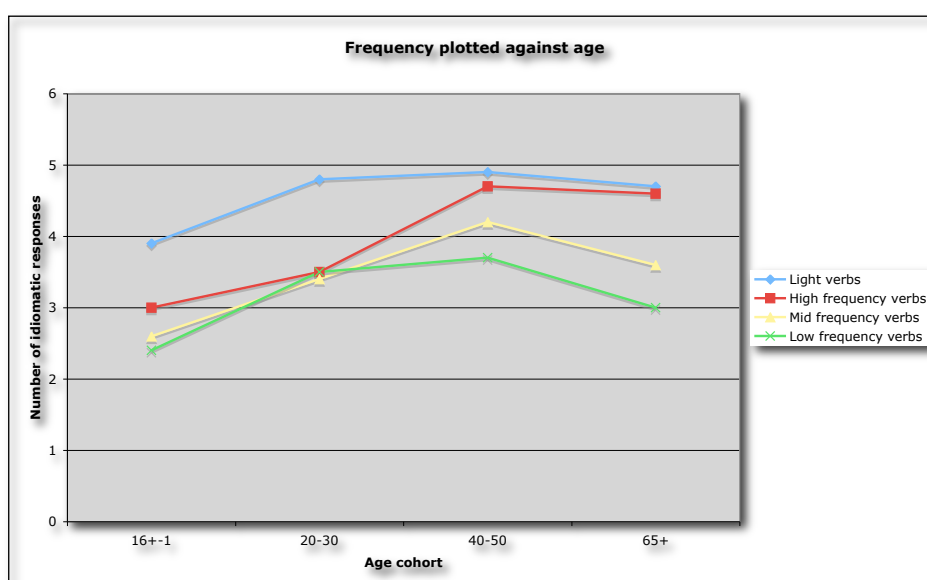
The research instrument used in Kuiper et al.'s (2009) experiment was a cloze test developed by the researchers. It took the form of a short story about a social event written in a vernacular style where the participants' knowledge of twenty formulaic expressions was tested. All test cases were verb phrases (VP's). Their verbs, which

were gapped in all cases, were classified into three frequency bands and four categories: high frequency light verbs, high frequency lexical verbs, medium frequency lexical verbs and low frequency lexical verbs.

As predicted, the results suggested that non-native speakers' acquisition of vernacular formulaic expressions is of a lower magnitude than that of native speakers of English. The means of correct answers for native speakers were 11.9 for adolescents, and 16.4 for adults. On the other hand, non-native speakers' means of correct answers were 0.8 for adolescents, and 1.8 for adults. In addition, for native and non-native speakers of English, data showed a more successful retrieval of expressions containing high light and high frequency verbs as compared to lower frequency verb expressions (See *Figures 10 & 11*).

Figure 10

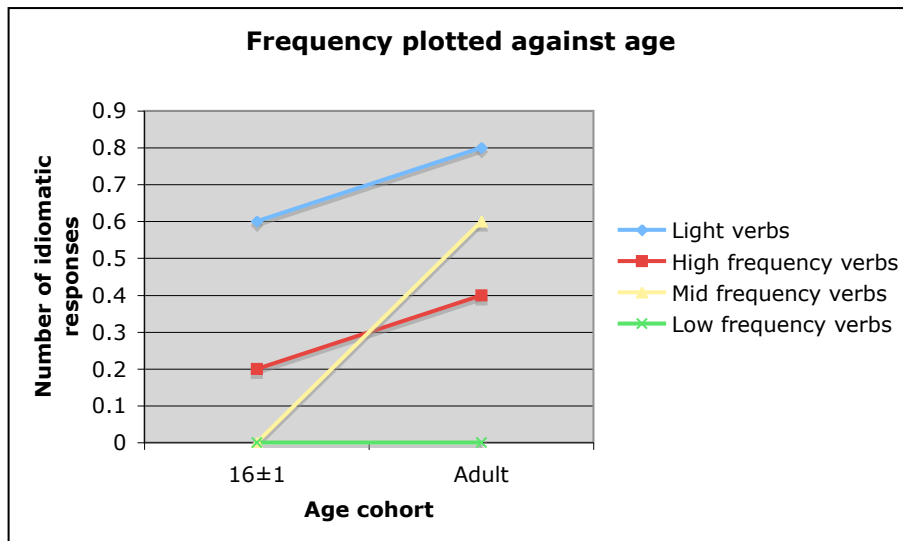
Native speaker recall of heads of phrasal lexical items



Taken from Kuiper et al. (2009, p. 234).

Figure 11

Non-native speaker recall of heads of phrasal lexical items

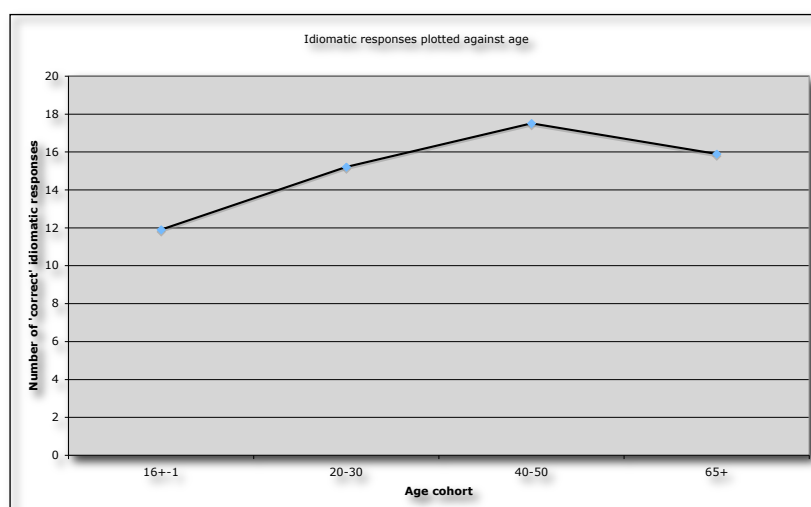


Taken from Kuiper et al. (2009, p. 234).

Results also indicated that there were differences in the number of correct answers among native speakers as a function of age, where older people scored higher than younger people. However, a decline in the number of correct answers was found for the participants over 65 years of age (See *Figure 12*).

Figure 12

Native speaker recall of verb heads of verb phrasal lexical items by age group



Taken from Kuiper et al. (Kuiper et al., 2009, p. 233).

Kuiper et al. (2009) argue that the findings obtained through the cloze testing procedure support previous hypotheses on the acquisition of formulaic language which point out that this process is age graded and that non-native speakers have a lower rate of acquisition. Most significantly, a key result of their investigation is the suggestion that the frequency of the head-verb that is gapped affects the recall of the corresponding formulaic sequence, since expressions containing more frequent verbal items were easier to recall than the ones that incorporated low frequency verbs.

1.12.2. The second study: *The Acquisition of Phrasal Vocabulary by Non-native Speakers of Spanish*

Escaip's (2008) Master's thesis research replicated the experimental design of Kuiper et al.'s (2009), but the target language of the study was Spanish instead of English. As in the original investigation, a cloze procedure was used to test the following three main hypotheses: a) There are significant differences between the degree of acquisition of formulaic sequences in native and non-native speakers of Spanish; b) The frequency of usage of the head-verbs contained in verb plus complement formulaic sequences is tightly linked to the acquisition of such sequences; and, c) Phrasal vocabulary of native speakers is age graded in that much of it is acquired in late adolescence and adulthood.

There were 94 participants divided in two groups: Fifty five native speakers of Spanish, ages ranging from 15 to 83 years (mean age = 39.01) and 39 non-native speakers of Spanish with an age ranging from 18 to 68 years –one did not specify age, (mean age = 39.32). Although educational status was not controlled, university-educated individuals were sought. As in the original study (Kuiper et al., 2009), gender or socio-economic status were not factors considered in the main propositions

of this investigation, thus they were not controlled, on the (falsifiable) assumption that they would not be relevant.

Replicating the experimental design of Kuiper et al. (2009), a cloze instrument was designed for this study to test the understanding and usage of certain colloquial formulaic expressions used in Mexico by native and non-native speakers of Spanish. This instrument took the form of a story about a social occasion written in colloquial language. Again, all test cases were verb phrases (VP's). Their gapped verbs were also categorized into three frequency bands and four categories: high frequency light verbs, high frequency lexical verbs, medium frequency lexical verbs and low frequency lexical verbs.

A preliminary analysis of the means and standard deviations of the scores of the participants showed that, as predicted, native speakers were acquainted with more of the formulaic expressions being tested and achieved higher scores in the cloze test, measured by the number of correct answers, than non-native speakers of Spanish (See Table 1).

Table 1: *Means and Standard Deviations for the Scores in the Cloze Test by Both Groups of Participants*

<i>Origin</i>	<i>N Participants</i>	<i>Mean</i>	<i>Std Deviation</i>
Native	55	15.2	2.6
Non-native	39	5.4	4.1

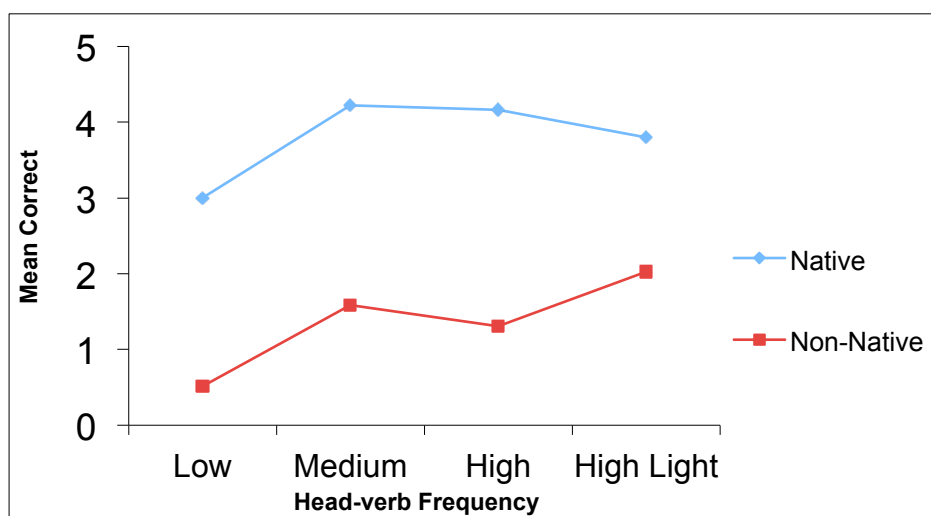
A *t*-test for independent samples was conducted to check if there were significant differences between the scores of native speakers and non-native speakers

of Spanish, $t(60) = 12.905$, $p < .001$. As expected, native speakers achieved much higher scores in the cloze test than non-native speakers of Spanish.

In addition, a MANOVA analysis was performed and the results showed a significant effect of verb frequency on the number of correct answers in the cloze test, $\lambda = 0.49$, $F(3, 90) = 30.61$, $p < .001$. As expected, both groups achieved a higher number of correct answers for the formulaic expressions with High Light frequency verbs than for the formulaic expressions using Low frequency verbs, with the High and Medium frequency being in the middle. Finally, the MANOVA also showed a significant interaction between origin and verb frequency (difficulty), $\lambda = 0.77$, $F(3, 90) = 9.05$, $p < .001$. Thus, the effect of verb frequency on the cloze test total was different for the native speakers than for the non-native speakers of Spanish. As can be seen in *Figure 13*, this interaction is a function of the non-native speakers largely producing the predicted pattern in which they achieved the highest score on the easiest category, whereas the native speakers produced a flat pattern of results across the easiest three categories.

Figure 13

Means of the number of correct answers for the four categories of formulaic expressions according to their head-verb frequency



Finally, to test the links between age and the mastery of formulaic expressions in Spanish for native speakers, a correlation between age of native speakers and the number of correct answers in the cloze test was performed. As predicted, the number of correct answers in the cloze test increased significantly with age, which suggests that older people know considerably more phrasal vocabulary items than younger people (See Table 2). However, the results did not support the prediction that although the knowledge of formulaic expressions should increase with age, there should be a decline in older stages of life (> 60 years old). To test this prediction for the Spanish language a quadratic function was fitted to the data, but the associated Beta coefficient for the quadratic effect was not significant, $\beta = -.759$, *n.s.*

Table 2: *Correlation Coefficients for Native Speakers of Spanish Between the Major Variables*

	<i>High Light</i>	<i>High</i>	<i>Medium</i>	<i>Low</i>	<i>Cloze Test</i>	<i>Cult Quest</i>	<i>Age</i>
<i>High Light</i>	1	.46**	.16	.31*	.67**	-.05	.19
<i>High</i>		1	.40**	.40**	.78**	.13	.28*
<i>Medium</i>			1	.16	.61**	-.03	.20
<i>Low</i>				1	.72**	.20	.21
<i>Cloze Test</i>					1	.10	.31*
<i>Cult Quest</i>						1	.06
<i>Age</i>							1

NOTE: Head-verbs of the formulaic expressions contained in the cloze test were classified under four categories according to their frequency as per research in several sources on word frequency in the Spanish language (see Appendix DDD).

* $p < .05$. ** $p < .01$

Thus, Escaip's (2008) Master's thesis research extended the findings of Kuiper et al.'s (2009) study, which targeted the English language, to the Spanish language. In both studies a cloze procedure confirmed three main hypotheses:

- a) There are significant differences between the degree of acquisition of formulaic language items by native and non-native speakers. Native speakers of a particular language are acquainted with a significantly more extensive phrasal vocabulary than non-native speakers of the language.
- b) The frequency of usage of the head-verbs contained in verb plus complement formulaic sequences is positively correlated with the acquisition of such sequences. The higher the frequency of the head-verb of the phrasal expression, the more the likelihood that a speaker of the language knows such expression.
- c) Phrasal vocabulary is age graded in native speakers: older people know considerably more phrasal vocabulary items than younger people.

In sum, the results of Escaip's (2008) study, which used more sophisticated statistical analyses, showed that Kuiper et al.'s (2009) findings are generalizable beyond the English language to Spanish.

1.12.3. The Present Study: *The Acquisition of Phrasal Vocabulary by Native and Non-native Speakers of Three Main Western Languages: Spanish, English and French*

This research broadened the experimental design carried out in the former studies to include the French language, in an attempt to strengthen the argument that the processes of acquisition of formulaic language among diverse linguistic systems function in a very similar way (Corpas Pastor, 2003). The cloze instruments developed to test formulaicity in the English and Spanish languages' studies were used again, and an analogous instrument was created for the French language. The

instruments were administered to new samples of participants of a wide age-range, native and non-native speakers of Spanish, French and English, to test the following three main hypotheses:

1. There are significant differences in whether or not formulaic sequences are acquired by native and non-native speakers of Spanish, English and French.
2. The frequency of usage of the head-verbs contained in verb plus complement formulaic sequences is positively correlated with whether or not such sequences are acquired.
3. Acquired phrasal vocabulary increases with the age of the speaker.

In addition, other variables such as time and type of learning and/or speaking the target language, and web corpora frequency counts not only for the head-verbs but also for the nouns contained in the formulaic expressions tested and for these formulaic expressions as wholes, were examined in this research in the attempt to answer some important interrogatives surrounding the matter of formulaic language. These variables and the related research questions are listed below:

- a) Is there a link between the duration of learning and age and the mastery of formulaic expressions for non-native speakers of a language?
- b) Is there a link between type of learning and the mastery of formulaic expressions for non-native speakers?
- c) Is the frequency of the formulaic expression as a whole linked with the knowledge of such expression by native and non-native speakers of a language?

- d) Is the frequency of the head-verb correlated with the frequency of the expression as a whole?
- e) Is the frequency of the noun(s) contained in a formulaic expression linked with the knowledge of such expression for native and non-native speakers of a language?

Thus, besides answering the previous research questions, the results of this study were mainly expected to support the predictions that non-native speakers acquire a significantly less extensive phrasal vocabulary than native users of the Spanish, French and English languages; that the frequency of usage of the head-verbs in formulaic expressions in any of these three languages is tightly linked with the mastery of such utterances; and, that the amount of formulaic language acquired by native speakers of Spanish, French and English is positively correlated with age. If these predictions are supported, the argument that the mechanisms by which people acquire formulaic language are very similar across diverse linguistic systems (Corpas Pastor, 2003) will be further strengthened. This fact, in turn, can have significant implications for language pedagogy.

Finally, since cloze testing has been acknowledged as a promising methodology for investigating whether or not a speaker of a language has acquired a formulaic lexical item (Kuiper et al., 2009), the Spanish, French and English research instruments used in this research were tested for reliability using the Cronbach's alpha reliability estimate.

METHOD

Having outlined the research literature that bears on the empirical part of this study, the empirical section now attempts to test the research hypotheses and answer the major research questions raised in this investigation and which have been presented and justified in the previous section *Research Rationale*. This chapter will describe a set of methodological procedures followed to answer these research questions, whereas the subsequent chapter will deal with the details of the statistical tests performed and the results obtained.

2.1. Participants

There was a total of 405 participants in the research, divided into six groups according to language (Spanish, French and English) and origin (natives and non-natives) (See Table 3). The ages of all participants ranged from 15 to 83 years old (See Table 4). Proficient non-native speakers of Spanish, French and English were sought for the study. This was considered to be accomplished as supported by the mean values of the time that non-native participants had been speaking the target language: 14.79 years for Spanish, 15.25 years for French, and 18.82 years for English. This information, and additional one on the language learning background of the participants such as the learning mode they underwent to learn the language (i.e., in the classroom, informal learning, or a combination of both), and the country where they learned the target language, was requested on the survey.

Table 3: *Number of Participants*

	SPANISH	FRENCH	ENGLISH	TOTAL
Native speakers	113	80	59	252
Non-native speakers	59	43	51	153
TOTAL	172	123	110	405

Table 4: *Age and Mean Age of Participants*

	SPANISH	FRENCH	ENGLISH
Native speakers	17 – 83 (mean = 30.35)	15 – 70 (mean = 38.48)	19 – 68 (mean = 39.95)
Non-native speakers	21 – 68 (mean = 40.56)	17 – 66 (mean = 36.26)	18 – 65 (mean = 36.61)

As in the previous studies (Escaip, 2008; Kuiper et al., 2009), apart from the language proficiency level of non-native speakers, educational status and socio-economic status of participants were not factors considered in the main propositions of this investigation. Thus, they were not controlled for, on the (falsifiable) assumption that they would not be relevant. However, many tertiary education institutions and professional organizations were approached in the search for participants in this research.

Testing the proposition that there exist systematic differences between male and female learners in their disposition toward language and their linguistic abilities (Dörnyei & Csizér, 2002; Holmes & Meyerhoff, 2003) was not among the main goals of this research. However, it was considered that the investigation of this variable

might provide grounds for further research in formulaic language. Therefore, gender of participants was among the information requested on the survey.

In most cases, the researcher successfully obtained appropriate information on the background of the participants who completed the survey online to ensure they fulfilled the requirements. However, this was not the case in all instances and the researcher had to invalidate some of the surveys due to lack of essential information such as the time of speaking the language, or uncertainty about the place where the language learning took place. Some sort of intuitive criteria had to be used as well to either validate or invalidate some of the surveys in certain cases, e.g., a suspiciously high score.

2.1.1. Spanish research participants

There were 172 participants in the Spanish language research: One hundred and thirteen native speakers (43 male and 70 female), ages ranging from 17 to 83 years (mean age = 30.35), and 59 non-native speakers (29 male and 30 female), with an age ranging from 21 to 68 years (mean age = 40.56) (See Tables 3 & 4). The considerable difference between the means of the age of the two groups is due to the fact that a significant part of the sample of native speakers was comprised of students of two Mexican universities, Universidad Autónoma de Yucatán and Universidad Anáhuac Mayab, institutions which substantially contributed to the administration of the research instrument. After carefully considering the pros and the cons of randomly dismissing some of the surveys of native participants with an age between 20 and 30 years to even out the number of surveys of both native and non-native speakers of Spanish, it was decided that doing so would result in the waste of important and

interesting data for the study. Thus, the information in all the surveys obtained from native speakers was used when running the statistical tests for the investigation.

The native speakers were all Mexican, and the non-native speakers were either living in Mexico at the time of the completion of the survey, or had lived in Mexico for some time. This guaranteed that the participants were recruited from a population living in the same language environment, so the formulaic expressions to be explored in the cloze test would very likely have been accessible to all of the participants, in the speech produced in a vernacular language in casual and quotidian circumstances in a Mexican community.

Non-native speakers of Spanish had been learning and/or speaking the language between 20 and 600 months (mean time = 177.42 months, i.e., 14.79 years). The native languages of non-native speakers of Spanish were Creole/French (1), Dutch (3), English (33), French (8), German (6), Greek (1), Italian (2), Japanese (1), Portuguese (2), and Slovak (1). One participant did not specify native language.

Most participants for the Spanish study were recruited personally in Mexico. However, in many cases, especially for non-native speakers of Spanish, participants were contacted through the Internet.

2.1.2. French research participants

For the French part of the research there were 80 native speakers (19 male and 61 female), and 43 non-native speakers of French (10 male and 33 female), ages varying between 15 and 70 years (mean age = 38.48) for the first group, and between 17 and 66 years (mean age = 36.26) for the second one (See Tables 3 & 4).

For the French study, the researcher looked out for native speakers that had been born in France. However, the possibility that other native French respondents

were not originally from France remained, since nationality was not among the information requested on the survey. With a few exceptions, due to the impossibility of administering the survey *in-situ*, all surveys were completed online.

The non-native speakers of French were also recruited online. In all cases, participants had either done French at school in their native country or at a school in France, learned French in an informal manner by living in France, or a combination of both. This ensured that the French language knowledge of the non-native speakers that participated in the study corresponded to the French language spoken in France with its related expressions, increasing the chances of exposure of these participants to the formulaic items to be explored in the cloze test and typically produced in the colloquial discourse of the speech community in France.

The non-native speakers of French had been learning and/or speaking the language between 14 and 600 months (mean time = 183.02 months, i.e., 15.25 years). The native languages of the non-native speakers of French were Dutch (1), English (19), German (1), Mandarin (1), Portuguese (1), Russian (2), and Spanish (18).

2.1.3. English research participants

As for the English part of the study, 59 native speakers (22 male and 37 female), ages ranging from 19 to 68 years (mean time = 39.95), and 51 non-native speakers (12 male and 39 female), ages between 18 and 65 years (mean time = 36.61) participated in the research (See Tables 3 & 4).

All native speakers were New Zealanders living in New Zealand at the time of the administration of the survey. Again, this guaranteed that the participants were members of a population living in the same language setting and they would all very

likely be familiar with the phraseological items in the cloze test designed to be applied among inhabitants of the local community.

Non-native speakers of English were mostly recruited in New Zealand, either on a personal basis or through the Internet. To prevent obtaining misleading results, only the surveys of participants that had learned English in New Zealand or in the UK were kept, since some of the formulaic expressions contained in the cloze test are not produced in the speech of other English speaking countries such as the United States of America or Canada.

The non-native speakers of English had been learning and/or speaking the language between 42 and 684 months (mean time = 225.78 months, i.e., 18.82 years). The native languages of the non-native speakers of English were Arabic (1), Cantonese (1), Danish (1), Dutch (2), French (1), German (2), Japanese (1), Kiribati (1), Mandarin (3), Portuguese (1), Russian (7), Spanish (29), and Telugu (1).

2.2. Measures

Three different cloze instruments to test the participants' knowledge of certain formulaic expressions were used for this research, one for each of the languages explored: Spanish, French and English (See **Appendices A, B & C** respectively). They were all written in the corresponding target language, and had a cover that provided information on the author and her academic affiliation, as well as some information about the survey itself and some general instructions for its completion. Without disclosing the specific purpose of the research, more precise instructions for the completion of the survey were given on the second page, just after a brief section with questions designed to get relevant information from every participant such as

their age, gender, native language, and, in the case of non-native speakers, time of speaking the language, type of learning (formal, informal or a combination of both), and country where the learning took place.

All questionnaires were anonymous, so participants were instructed to not write down their names. Participants were also advised that their contribution was strictly voluntary and once they had completed and returned their questionnaire, it was not going to be possible to retrieve it and remove it from the database because, being anonymous, the researcher would not be able to know which one was the respective one. A research follow-up option was given to the respondents of the survey by indicating on the cover the approximate length of time calculated to complete the study and the e-mail address of the researcher, in case they wanted to get a copy of the results when the research was concluded.

2.2.1. Spanish language instrument

The instrument employed to explore phrasal vocabulary for the Spanish language was created by the author of the present study and previously used for her Master of Science thesis research (Escaip, 2008). Due to its satisfactory results that supported the effectiveness of this test as an appropriate measurement tool for the conceived purposes of the study, it was decided that it would be used again for this research.

It is important to mention that the creation of this instrument was strongly influenced by the design of the cloze test that was used in the study by Kuiper et al. (2009), *Acquiring Phrasal Vocabulary*, since it was planned to be administered to test the same critical theoretical propositions. Therefore, in order to attain the highest level of homogeneity across instruments, the researcher followed analogous

parameters used in the creation of the English language instrument for the construction of the Spanish cloze test. This was accomplished under the supervision of one of the creators of the English instrument, Professor Kon Kuiper, who was satisfied with the result.

The elaboration of the cloze instrument designed to test the understanding and usage of certain idiomatic expressions used in Mexico by native and non-native speakers of Spanish, was based as well on the consideration of the methodological issues of cloze testing mentioned in the introduction section (Abraham & Chapelle, 1992; Alderson, 1979a; Bachman, 1985; Bensoussan & Ramraz, 1984; J. D. Brown, 1993b; Dörnyei & Katona, 1992; Katona & Dörnyei, 1993; Kobayashi, 2002), and on the superlemma theory on the access and production of phrasal vocabulary (Kuiper et al., 2009; Sprenger et al., 2006).

The instrument took the form of a story called *La Posada*⁴¹ about a social occasion written in colloquial language (See **Appendix A**). It was intended to be easy enough to read and provide ample narrative interest in order to stimulate the readers to go through the whole text. *La Posada* was designed to provide the sufficient amount of context needed to restore the deleted words, with the aim of offering participants the most appropriate conditions for success in finding the correct word. As in the original experimental design (Kuiper et al., 2009), this cloze test provided participants with significant clues to the meanings of the whole expressions whilst leaving open the possibility of other plausible fillers.

⁴¹ *Posada* is the Spanish word for ‘lodging’ or ‘accommodation’. *Posadas* are traditional Mexican parties celebrated daily from the 16th December until Christmas Eve. They represent Mary, pregnant with Jesus, and Joseph’s search for a place to stay in Bethlehem, hence the name. It is also said that the nine-day period over which the *posadas* are celebrated represents the nine months of Mary’s pregnancy. *La Posada* means *The Posada*.

Test Items. Twenty formulaic sequences, i.e., idiomatic expressions, undoubtedly existent in the speech of the community, were selected after an extensive investigation of the context in which they are typically used. For the selection process several phrasal dictionaries were consulted first, and 252 formulaic expressions containing a total of 97 verbs were chosen (Domínguez González, Morera Pérez, & Ortega Ojeda, 1995) (Gual, 1995) (Iribarren, 1994) (Sánchez Anaya, 1985) (Sánchez Benedito, 1989) (Sánchez Benedito & Lavin, 1990) (Seco, Andrés, & Ramos, 2004) (Varela & Kubarth, 1994).

A second step was to investigate the frequency ranks of the diverse head-verbs contained in such expressions in order to categorize them according to their usage. Thorough investigation on Spanish verb frequency rankings from several sources (Alameda & Cuetos, 1995) (Buchanan, 1927) (Davies, 2006) (Eaton, 1961) (García Hoz, 1953) (Juilland & Chang-Rodríguez, 1964) (Rodríguez Bou & Méndez, 1952) was initially performed. A combined evaluation of the different criteria (frequency, usage, dispersion, merit, range and weighting among others) presented in these sources led to the decision of using the information of three main sources: Buchanan (1927), Juilland & Chang-Rodríguez (1964) and Davies. (2006). Preference was given to the last frequency source as it contains data obtained from an updated 20,000,000 word corpus where the written sources (fiction and non-fiction) constitute two thirds of the corpus and the spoken sources a full one-third. The other sources' registers are based entirely on written Spanish from the 1950s or earlier. However, they were still considered as an additional tool to confirm the accuracy of the allocation of the verbs in the particular frequency bands where they had been placed.

With slight differences among these sources, the distribution of verbs along the different frequency bands was established to be largely precise. The head verbs of

the pre-selected expressions were then classified into four different categories: high frequency light (or delexicalized) verbs (Grimshaw, 1990) (HL), high frequency lexical verbs (H), medium frequency lexical verbs (M), and low frequency lexical verbs (L). These categories were defined following a combination of this study's researcher's criteria and the criteria used in the original study (Kuiper et al., 2009) where high frequency light verbs are higher in frequency than the other high frequency verbs.

A final step was the definition of the ultimate list of the 20 expressions that were to be included in the instrument, according to the frequency ranking of their head-verbs. **Appendix D** shows a comparison of the selected verbs frequency rankings in the three sources mentioned above, and **Appendix E** specifies the frequency criterion. An important consideration that was taken into account when selecting the definitive phrasal vocabulary items for the Spanish instrument was not to include any expression that could be literally translated to English to prevent cross-linguistic interference when answering the test since it was anticipated that a significant segment of the group of non-native speakers of Spanish was going to be comprised for native speakers of English⁴². This consideration was based on the fact that there are phraseological units which are totally equivalent in both first and second languages, and are used within the same kind of context with the same connotations and rhetorical effects (Corpas Pastor, 2001) (García Muruais, 1997). Cloze items that allowed for more than one conventional option (e.g. *enter/join the fray*) were also excluded. **Appendix F** presents the final list of formulaic expressions ordered by the frequency or their head verb.

⁴² At the time of the construction of this instrument for her MSc research, the researcher had access to a reasonably large English speaking community established in Mexico.

The selected idiomatic expressions for the cloze test were presented within the text of *La Posada* with a gap, each of which was to be filled by the participant who would try to produce the missing word that would typically complete the formulaic sequence presented. The context provided for each expression was clear and extensive. As in the original English language instrument, all 20 formulaic expressions were given in bold type to offer a visual clue that the word to be produced was associated to the bolded succession of words. The missing words were verbs, all of which belonged to the four different categories mentioned above. Five verbs of each category were included.⁴³

Deletion Ratio. Analogously to the English instrument, the deletion process used for this cloze test was rational as the words deleted were the head-verbs of the twenty formulaic expressions selected before creating the test. Therefore, random deletion was discarded. The objective was to verify if participants did know that particular fixed expression, so they had to produce the correct word, i.e., the head-verb that complemented it. Given that the cloze procedure in this study was testing for expressions, not single words, and each of the words sought was a verb that constituted an essential compositional element of the formulaic expression in question, neither the number of syllables in the sentence containing it, nor the incidence of such a word in the text was considered to affect difficulty. The only hint participants could use to access the correct word in their mental lexicon, and then produce it, was the semantic context that gave every phrasal item being tested a particular and exclusive meaning.

⁴³ The translation to English of the cloze test *La Posada* was not considered as relevant since the frequency rankings of the head-verbs of the formulaic expressions selected and the meaning of such formulaic expressions do not correspond to their English counterparts.

Answer Method. Although a multiple-choice methodology would be expected to submit a considerably larger number of correct answers, i.e., recognized phrasal lexical items, the main objective of this research was to verify if participants were able to access from their mental lexicon and then produce the head-verbs of the formulaic expressions being investigated, through the activation of the constituent lemmas of such expressions using only the context that was provided in the text as a clue (Kuiper et al., 2009; Sprenger et al., 2006). Therefore the test items were constituted by open format (i.e., open-ended) questions, where participants could freely provide the answer they thought was the right one.

Scoring Method. For the purpose of this research, the exact-word scoring method was considered to be the appropriate one, as no other words but the precise head-verbs of the formulaic expressions contained in the cloze test would be considered as correct answers. The only way of testing the correct knowledge of the formulaic expressions in question was to look for the exact words that complemented such expressions. Thus, an exact-word scoring method was followed, which added objectivity to the marking process because it was not affected by any kind of subjectivity or personal opinion from the part of the evaluator (Minimum score: 0 points; maximum score: 20 points). Some syntactic variations, i.e., the wrong tense of the verb and/or spelling mistakes were ignored since it was the participant's acquaintance with certain phrasal vocabulary items, and not their grammatical proficiency in the target language, what was being tested.

It should be noted that the procedures for the establishment of the deletion ratio, and of the answer and scoring methods to be used in the French and English

instruments, adhered to the parameters described above, in order to preserve the homogeneity across the experimental design of this research.

2.2.2. French language instrument

For the exploration of phrasal vocabulary in the French language, a cloze test was developed following the same procedures that were used for the design of the Spanish language instrument. Thus, the same methodological considerations on cloze testing (Abraham & Chapelle, 1992; Alderson, 1979a; Bachman, 1985; Bensoussan & Ramraz, 1984; J. D. Brown, 1993a; Dörnyei & Katona, 1992; Katona & Dörnyei, 1993; Kobayashi, 2002), and on the superlemma theory on phrasal lexical access (Kuiper et al., 2009; Sprenger et al., 2006) that were taken into account for the elaboration of the Spanish survey were also kept in mind for the construction of the French language survey.

The French language instrument was shaped into a short story called *Rosalie à la plage*⁴⁴ about a casual encounter at the beach of two teenagers whose attraction between each other draws them to spend and enjoy some time together. A preliminary script was written by the researcher, but, since French is not her native language, this script was sent to an expert in France, a French-born French literature professor, who made the necessary corrections to the text in order to get a fine and well polished final manuscript. The researcher provided him with clear and precise instructions for the task, as well as with some alternatives for the idiomatic expressions that could be used to test the participants' knowledge of phrasal vocabulary in French, in case that the expressions used in the first script of the story were not suitable.

⁴⁴ *Rosalie at the Beach*

As in the case of the Spanish survey, this story endeavoured to offer sufficient narrative appeal so as to encourage the readers to read it through to the end. It also aimed to deliver the amount of context necessary to facilitate every participant's successful retrieval of the missing word. After its completion, the story was double checked by another expert on the French language (who was also involved in the preliminary selection of the idiomatic expressions), a French-born French lecturer at the University of Canterbury, who ensured there were no semantic, syntactic and/or spelling mistakes (See **Appendix B** for final story).⁴⁵

Test Items. Consistent with the design of the Spanish instrument, twenty idiomatic expressions considered to be part of the speech in a French community were chosen. For this process a thorough search was carried out in a number of dictionaries of idiomatic expressions (Bernet & Rézeau, 1989; Berthier & Colignon, 1981; Beucler et al., 2000; Blampain, 1994; David Burke, 1996; Cheydleur, 2012; Gross, 1996; Guillemard, 2002; Keller et al., 1973; Kettridge, 1939; Lafleur, 1984, 1991; Ritchie, 1997), and in some Internet sources (French Expressions - French Phrases - French Proverbs). A total of 207 formulaic units including 85 verbs were originally selected.

The next step was to investigate the frequency ranks of the head-verbs of these expressions, with the purpose of classifying them into the four different frequency bands that had been previously stipulated for the grouping of the head-verbs of the Spanish (and English) idiomatic expressions: High frequency light (or delexicalized)

⁴⁵ As in the case of the Spanish instrument, a translation to English of the French story is not provided because the frequency rankings of the verbs included in the formulaic expressions used in the story and the meaning of such expressions do not match their English counterparts.

verbs (Grimshaw, 1990) (HL), high frequency lexical verbs (H), medium frequency lexical verbs (M), and low frequency lexical verbs (L).

The investigation of the frequency ranks of the verbs contained in the preliminary list of French idiomatic expressions was achieved using the frequency data in *Lexique 3*⁴⁶, a lexical database for French. *Lexique 3*, which can be downloaded or consulted freely online⁴⁷, contains word information such as gender, number, grammatical category and frequency, plus a set of other interesting features in the area of psycholinguistics resources.

Thus, the word data on *Lexique* were carefully examined and the 85 French verbs contained in the preliminary selection of 207 idiomatic expressions were classified into four frequency bands, according to their corresponding given frequency value. It's important to note that the decisions made during this process aimed to homologate the standards used in the construction of the Spanish and English languages research instruments.

In order to ensure that the French idiomatic expressions containing these verbs were correct, used by native French speakers in France and, thus, suitable for being items of the French instrument, they were checked by the French-born French lecturer at the University of Canterbury in New Zealand, whose guidance led to the elaboration of a second list containing 67 expressions including 32 verbs. Twenty of these expressions were used in the first script written by the researcher, but a list with other options for expressions containing verbs that spanned the four different frequency categories required for the study were sent to the French literature

⁴⁶ *Lexique 3*'s French words' frequency data are derived from the examination of Frantext, a written corpus comprised of 487 literary texts (mostly novels and essays) published between 1950 and 2000, containing a total of 31 million items, and a corpus of 52 million French words coming from French subtitles of a variety of films (New, Brysbaert, Veronis, & Pallier, 2007; New et al., 2004).

⁴⁷ <http://www.lexique.org>

professor in France who, as mentioned before, revised and corrected the original script of the story *Rosalie à la plage* (See **Appendix G** for the frequency rankings of the 20 verbs contained in the expressions selected, **Appendix H** for the frequency criterion, and **Appendix I** for the final list of the formulaic expressions used in the story, ordered by the frequency of their head-verb).

Similarly to the elaboration of the Spanish instrument, care was taken to not to include any expression with a potential literal translation to Spanish and/or English, in order to avoid cross-linguistic interference.

2.2.3. English language instrument

The instrument used to investigate phrasal vocabulary for the English language was the original cloze test employed in Kuiper et al.'s (2009) study, investigation that constitutes the foundation of this research. Kuiper et al.'s (2009) study could be considered as the first one to explore the links between the acquisition of formulaic expressions and the frequency of their head-verbs in any language. The instrument used in Kuiper's research was a cloze test shaped into a short story about a social event (a Christmas function) written in a vernacular style (See **Appendix C**). Its aim was to be interesting enough and easy to read in order to motivate participants to go through the whole story up to the end. It was designed to test the readers' knowledge of twenty idiomatic expressions used in colloquial English language by asking them to restore the deleted head-verbs of the expressions that were given in bold letters throughout the text.

Test Items. For the construction of the test, Kuiper et al. (2009) performed an initial random selection of formulaic expressions from the *Syntactically Annotated*

Dictionary of Idioms (Kuiper, McCann, Quinn, Aitchison, & van der Veer, 2003). An investigation on the frequency ranks of the head-verbs of such expressions followed, leading to the final selection of the expressions to be included in the test. Twenty phrasal lexical items were chosen to be the test items according to the membership of their head-verbs in four frequency categories. These categories were established based on a combined evaluation of verb frequency ranks in Kilgarriff's BNC rankings (A. Kilgarriff, 1995), the Most Frequent Words (I. S. P. Nation, 2000) lists and the discussion in Nation and Waring (I.S.P. Nation & Waring, 1997). These categories were: a) Light (or delexicalized) high frequency verbs (Grimshaw, 1990); b) Non-light high frequency verbs; c) Mid-frequency verbs; and, d) Low frequency verbs (See **Appendix J** for frequency data and band allocation of head-verbs, **Appendix K** for the frequency criterion used, and **Appendix L** for the list of final expressions selected).

To confirm the accuracy of the frequency data used to categorize and select the formulaic expressions for the test, the frequency of the 20 verbs contained in these expressions was checked against Kilgarriff's lemmatized BNC frequency list, the frequency data from CELEX database (Baayen, Piepenbrock, & van Rijn, 1993) and the BNC corpus data (www.natcorp.ox.ac.uk/). Only minor ranking discrepancies were found and the correct allocation of the verbs to particular frequency bands was corroborated.

In order to verify the frequency ranks of the verbs comprised in the phrasal lexical items in the English cloze test, the author of the present study performed a second confirmation process through the frequency data sources mentioned in the previous paragraph, obtaining the same outcome. Therefore, both the researcher and her supervisor decided that using the same instrument for the current PhD study

would be appropriate in order to obtain standardized results that could be compared with those obtained in the original research. The cover, the participant information section, and the section containing the instructions to complete the test of the original instrument were modified to suit the requirements of the present investigation, but the cloze test remained unaltered.

2.3. Procedure

Many surveys, especially in the case of the English and Spanish languages, were administered on a personal basis. However, an important part of the data collection was performed by running the surveys via Internet. Many participants were contacted with the support of people living in the target locations: New Zealand, Mexico and France.

2.3.1. Face-to-face administration

Native and non-native speakers of English, Spanish and French were sought for the accomplishment of this research. In the case of the English language, most participants were New Zealand residents, both native and non-native speakers, fact that facilitated significantly the administration of the survey face-to-face. Administration on a personal basis was also significant for the Spanish language survey, since many surveys were applied on a field trip that the researcher did to Mexico, where she spent a few months. As for the French survey, only a few participants, mainly non-native speakers of the language, were found in Christchurch, where the author of the present study is based.

All participants, were informed about the importance of giving reliable and honest information for the purposes of the study. No specific information on the objectives of the study was given to participants; they were only told the name of the researcher, the degree she was a candidate for and the name of the academic institution. Such information was specified on the survey's cover. It was an anonymous test and they were told that there were no right or wrong answers, so they did not have to worry about their results. Participants were asked to fill in the second page of the survey with some general information and were instructed to ensure they read the whole story up till the end, and that they responded the complete survey.

An important request to the participants that completed the survey in their own time was not to ask for help to anyone else when answering the survey, either native or non-native speaker of the corresponding language. Again, the fact that the survey was anonymous, and that there were no right or wrong answers, should prevent participants from experiencing any kind of stress.

Time of completion of the survey was not controlled. However, participants were asked not to spend any extra time trying to produce a 'better' answer and just to fill the gaps in the cloze test with their first thought. The time participants took to complete the survey, regardless of the language, ranged between 20 and 25 minutes, with native speakers taking less time (15 min) in many cases for all languages.

2.3.2. Administration via Internet

As mentioned before, a significant portion of the data gathering was completed through the Internet, especially for the French survey due to the difficulty in finding enough French speakers in Christchurch. Yet, many surveys for the English and Spanish languages were also administered online.

In the cases where the survey was done through the Internet, an e-mail requesting help from potential participants was prepared including precise instructions on how to complete the survey on their computer and send it back through the web. The researcher also thanked them for their time and support in this email. The email also asked participants to provide honest information and do not seek help from anyone else when figuring out the missing words, since the outcome of the research depended on their responses. This information was contained in the cover of the survey as well. In addition, in order to encourage their contribution, the email assured participants of the anonymity of the survey, so they could feel free to write the first thing it came to their mind and do not worry wondering if the answers were right or wrong, thus avoiding unnecessary stress (See **Appendices M, N & O** for e-mails in Spanish, French and English, respectively).

Time of completion for surveys answered online was not controlled. An approximate time of completion of 20 minutes was specified on the email sent to participants. The researcher did not get any comments on the time of completion when participants sent the completed surveys back, which leads to the belief that this was about the time participants took for the task.

All completed online surveys were printed as soon as they were sent back in order to have a hard copy for each one of them, and so the researcher could mark and catalogue every one of them appropriately, and make relevant notes.

2.3.3. Corpora data collection

Besides the investigation of the frequency ranks of the head-verbs contained in the idiomatic expressions selected for the Spanish, French and English research instruments, which was accomplished through the methods previously described, the

frequency of each expression as a whole, and the frequency of the nouns contained in such expressions, were investigated as well. This was achieved by subscribing to Sketch Engine, a web-based corpus query system⁴⁸ that takes as its input a corpus of any language with an appropriate level of linguistic mark up. This corpus tool takes any language and its corresponding grammatical patterns, and generates word sketches for the words of that language (Adam Kilgarriff, Pavel, Pavel, & Tugwell, 2004). The Sketch Engine software allows language researchers to perform a wide variety of query types, and constitutes a useful tool to investigate word's grammatical and collocational behaviour in a number of languages.

Therefore, Sketch Engine was used to obtain the frequency of the Spanish, French and English idiomatic expressions used in this research as wholes, and the frequency of their respective nouns, in three large corpora:

- Spanish: esTenTen (2,459,314,898 tokens - 2,103,770,763 words).
- French: frTenTen (12,369,868,562 tokens - 10,666,617,369 words).
- English: BNC (112,181,015 tokens - 96,048,950 words).

In addition, for a validity check of the frequency information found on these corpora and the frequency values of the head-verbs that were calculated and used for the categorization of these verbs in the four frequency bands of interest (High Light, High, Medium and Low), information on the frequency of such verbs was also obtained from these three corpora, and correlation analyses were performed (See **Appendices P, Q & R** for the corpora frequency counts for Spanish, French and English respectively).

⁴⁸ <http://www.sketchengine.co.uk/>

RESULTS

In this section I first report results testing the hypothesis that native speakers of Spanish, French and English should have more extensive phrasal vocabulary than non-native speakers of these three languages. Second, I deal with the critical hypothesis that the mastery of formulaic sequences is linked to the frequency of the usage of head-verbs for all three languages: Spanish, French and English. Third, I present results that support the existence of links between age and the mastery of formulaic language for native speakers of Spanish, French and English. Fourth, results that pertain to the relationship between time of learning and and/or speaking the target language and the mastery of formulaic language for non-native speakers are presented. Fifth, I assess the effects of learning type on the knowledge of phrasal vocabulary for non-native speakers, as per the results of this investigation. Sixth, I report the relationship found between the frequency of the formulaic expression as a whole and the knowledge of such expression for native and non-native speakers of the three languages investigated in this research. Seventh, the correlations between the frequency of the head-verb of the formulaic expressions and the frequency of such expressions in the same corpus will be reported. Eighth, I present the results of the validity check of the Spanish, French and English corpora used in this research, the frequency of such verbs as per research in several sources of word frequency in all three languages, and the knowledge of the formulaic expressions tested. Ninth, I present results on the links between the frequency of the noun(s) contained in a formulaic sequence and the knowledge of such expression for native and non-native speakers of Spanish, French and English. Finally, the internal reliability of Cronbach's alpha reliability estimates for the Spanish, French and English cloze

instruments used in this research to assess the mastery of formulaic expressions will be presented.

3.1. Differences Between Scores of Native Speakers and Non-Native Speakers of Spanish, French and English.

As predicted, the native speakers were acquainted with more of the formulaic expressions being tested and achieved higher scores in the cloze test, measured by the number of correct answers, than non-native speakers of the three different languages studied in this research (See Table 5 and Table 6).

Table 5: *Means and Standard Deviations for the Scores in the Cloze Test by the Six Groups of Participants*

<i>Origin</i>	<i>Language</i>	<i>N Participants</i>	<i>Mean</i>	<i>Std Dev</i>
Native	Spanish	113	12.34	3.63
Native	French	80	13.89	2.97
Native	English	59	13.31	3.68
Non-native	Spanish	59	5.24	4.30
Non-native	French	43	5.42	4.23
Non-native	English	51	5.61	4.29

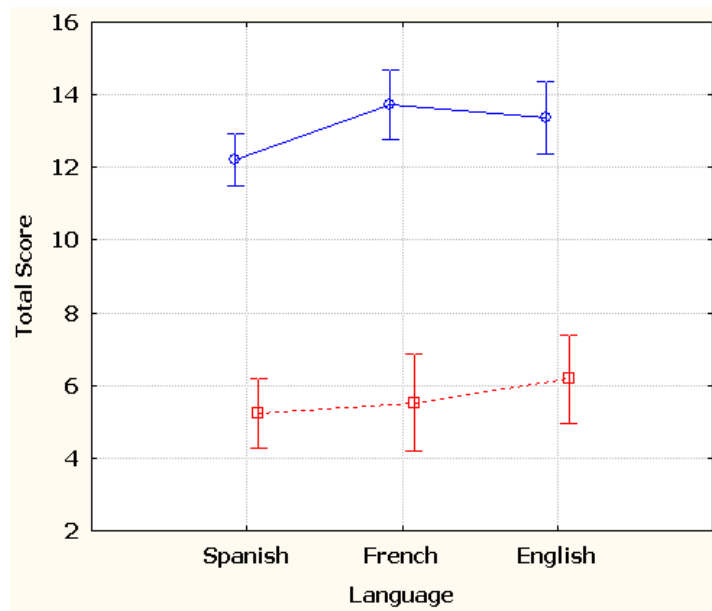
Table 6: *Means and Standard Deviations for the Scores in the Cloze Test by All the Participants*

<i>Origin</i>	<i>Language</i>	<i>N Participants</i>	<i>Mean</i>	<i>Std Dev</i>
Native	ALL	252	13.06	3.50
Non-native	ALL	153	5.41	4.25

A Factorial 2 (native versus non-native) x 3 (language) ANOVA was conducted to test for significant differences between the scores of native speakers and non-native speakers of the three languages of the study. As predicted, native speakers in the study achieved significantly higher scores in the cloze test than non-native speakers ($F(1,401) = 335.48, p < .001$). When factoring in the three different languages studied, Spanish, French and English, significant differences could still be observed between the scores of native and non-native speakers for each language, ($F(1,393) = 291.34, p < .001$). Caution must be exercised in interpreting these findings as there is significant heterogeneity of variance between groups ($F(1,393) = 2.82, p = 0.001$), this violation is most likely due to the differences in sample size between groups. The differences in mean scores are shown in *Figure 14*. Small differences between the languages can be observed in this figure. These differences are not significant ($F(2,393) = 2.72, p = 0.067$).

Figure 14

Mean correct responses in the cloze test
for native (blue) and non-native (red) speakers

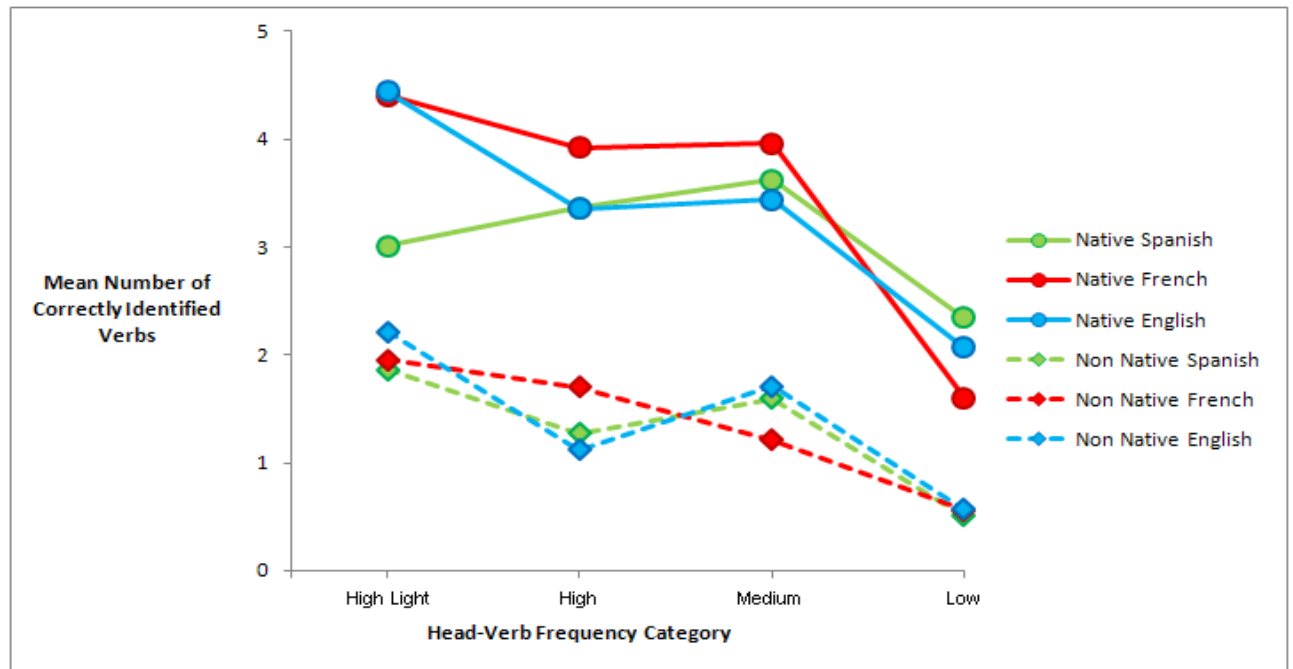


3.2. Is the Frequency of the Head-Verb of a Formulaic Expression Linked with the Knowledge of Related Expressions by Native and Non-native Speakers?

On a difficulty scale, expressions containing High Light frequency verbs were considered the easiest. These were followed by expressions with High frequency verbs then Medium frequency verbs and then ending with the Low frequency verb expressions, which were considered the hardest ones on the scale. A preliminary analysis of means and standard deviations for the scores of all the participants across verb categories was conducted. It was observed that, in general, expressions containing high frequency verbs achieved higher scores by both native and non-native speakers of each of the three languages studied than expressions including low frequency verbs (See *Figure 15* and Table 7).

Figure 15

Means of the number of correct answers for the four categories of formulaic expressions according to their head-verb frequency



To test if the frequency of the head-verb of an expression affects the knowledge of such expression, after accounting for the differences between languages and origin (native / non-native), a Separate Slopes ANCOVA Model was conducted. Significant differences in knowledge of expression between native and non-native speakers were found ($F(1,108) = 86.54, p < .001$). There were no significant differences between languages ($F(2,108) = 1.72, p = .184$).

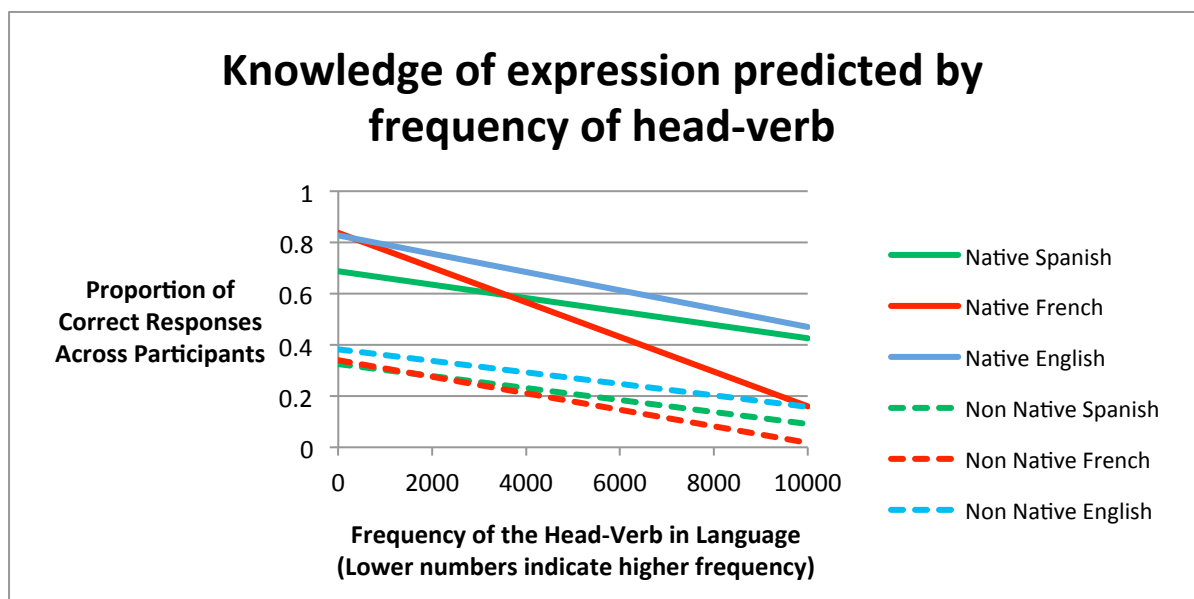
Table 7: *Means and Standard Deviations of the Number of Correct Answers for the Four Categories of Formulaic Expressions According to Their Head-Verb Frequency for All Groups of Participants*

<i>Language</i>	<i>Origin</i>	<i>Verb Category</i>	<i>Mean Proportion</i>	<i>Mean Correct</i>	<i>Std Dev</i>
Spanish	Native	High Light	0.60	3.01	0.32
		High	0.67	3.36	0.14
		Medium	0.72	3.62	0.09
		Low	0.47	2.35	0.31
	Non-native	High Light	0.37	1.86	0.30
		High	0.25	1.27	0.11
		Medium	0.32	1.59	0.11
		Low	0.10	0.51	0.07
French	Native	High Light	0.88	4.40	0.09
		High	0.79	3.93	0.16
		Medium	0.79	3.96	0.11
		Low	0.32	1.60	0.38
	Non-native	High Light	0.39	1.95	0.24
		High	0.34	1.70	0.18
		Medium	0.24	1.21	0.17
		Low	0.11	0.56	0.11
English	Native	High Light	0.89	4.44	0.06
		High	0.67	3.36	0.20
		Medium	0.69	3.44	0.23
		Low	0.41	2.07	0.32
	Non-native	High Light	0.44	2.22	0.20
		High	0.22	1.12	0.17
		Medium	0.34	1.71	0.20
		Low	0.11	0.57	0.09

NOTE: There were a total of 405 participants: 113 native and 59 non-native speakers of Spanish; 80 native and 43 non-native speakers of French; and, 59 native and 51 non-native speakers of English. Ages ranged from 15 to 83 years old: 17 – 83 for native and 21 – 68 for non-native speakers of Spanish; 15 – 70 for native and 17 – 66 for non-native speakers of French; and, 19 – 68 for native and 18-65 for non-native speakers of English.

A Separate Slopes ANCOVA was run to test whether the frequency of the head verb in the expression predicts the number of times the expression was answered correctly. It was found that as the rarity of the head-verb increased the knowledge of the expression significantly decreased after factoring out language and origin ($\beta_s = -0.16 \dots -0.38$, $p_s < 0.05$). A Levene's test found no evidence of heterogeneity of variance ($F(5,114) = 1.164$, $p = 0.332$). Visual inspection of distributions of scores within each group found them to be approximately normal. The relationships between frequency of head-verb and knowledge of expression are shown in *Figure 16*.

Figure 16



This graph shows the significant effect of the frequency of the head-verbs on the knowledge of the expressions tested. The numbers for frequency correspond to the hierarchical position of the head-verb on the frequency scale. The lower the number, the higher the place of the verb on the scale. Note: Frequency of Head-Verb/ 10000.

3.3. Links Between Age and the Mastery of Formulaic Expressions for Native Speakers.

Correlational analyses were performed to test the effects of age on the knowledge of formulaic expressions for native speakers. As predicted, the number of correct answers in the cloze test increased significantly with age for Spanish ($r = .54$, $t(111) = 6.79$, $p < 0.001$), French ($r = .31$, $t(78) = 2.87$, $p = 0.005$) and English ($r = .51$, $t(57) = 4.42$, $p < 0.001$) within the study. This means that older people know considerably more phrasal vocabulary items than younger people. A quadratic function of age was then added as an additional covariate by method of hierarchical regression. This addition did not improve the model for the Spanish ($\Delta R^2 = .020$, $F(1,110) = 3.20$, $p = .077$) or French ($\Delta R^2 = .002$, $F(1,77) = .15$, $p = .703$) speakers but a significant decrease at high ages was found for English ($\Delta R^2 = .159$, $F(1,56) = 15.17$, $p < .001$) speakers.

3.4. Links Between Duration of Learning and Age and the Mastery of Formulaic Expressions for Non-native Speakers.

A second analysis was performed to test the effects of the number of years that speakers have been learning the language on the knowledge of formulaic expressions for non-native speakers. The number of correct answers in the cloze test increased significantly with time for Spanish ($r = .47$, $t(111) = 4.01$, $p = 0.015$) but not for French ($r = .24$, $t(78) = 1.58$, $p = 0.121$) or English ($r = .24$, $t(57) = 1.70$, $p = 0.095$) within the study, which were however approaching significance. Age was then added as an additional covariate by method of hierarchical regression. This addition did not improve the model for any group – Spanish ($\Delta R^2 = .015$, $F(1,56) = 1.12$, $p = .295$),

French ($\Delta R^2 = .035$, $F(1,40) = 1.53$, $p = .223$) or English ($\Delta R^2 = .037$, $F(1,48) = 1.97$, $p = .167$).

3.5. Links Between Type of Learning and the Mastery of Formulaic Expressions for Non-native Speakers

One way ANOVA tests were performed for the three different languages to test differences between the learning type (formal, informal or both) in knowledge of the formulaic expressions. Learning type was found to have no significant effects on the knowledge of phrasal vocabulary for Spanish ($F(2,56) = 2.20$, $p = .120$) French ($F(2,40) = 0.61$, $p = 0.550$) and English ($F(2,48) = 1.48$, $p = 0.240$) speakers (See *Figures 17, 18 & 19*). Planned comparisons were then used to directly test for differences between formal and informal learners, excluding the mixed (formal and informal) category. The results confirmed the earlier analysis, with no significant effects on the knowledge of phrasal vocabulary for Spanish ($F(1,56) = 2.29$, $p = .136$), French ($F(1,40) = 1.21$, $p = .277$) and English ($F(1,48) = 1.54$, $p = .221$) speakers. Levene's tests were non-significant for all languages except English which showed evidence of heterogeneity of variance ($F(2,48) = 8.11$, $p = 0.001$).

A separate slopes ANCOVA was used to test for differences in the effect of time learning on total score across learning types. The overall trend was that more time learning resulted in higher scores but there was a large amount of variability within the slopes.

Figure 17

Differences between learning types for non-native Spanish speakers

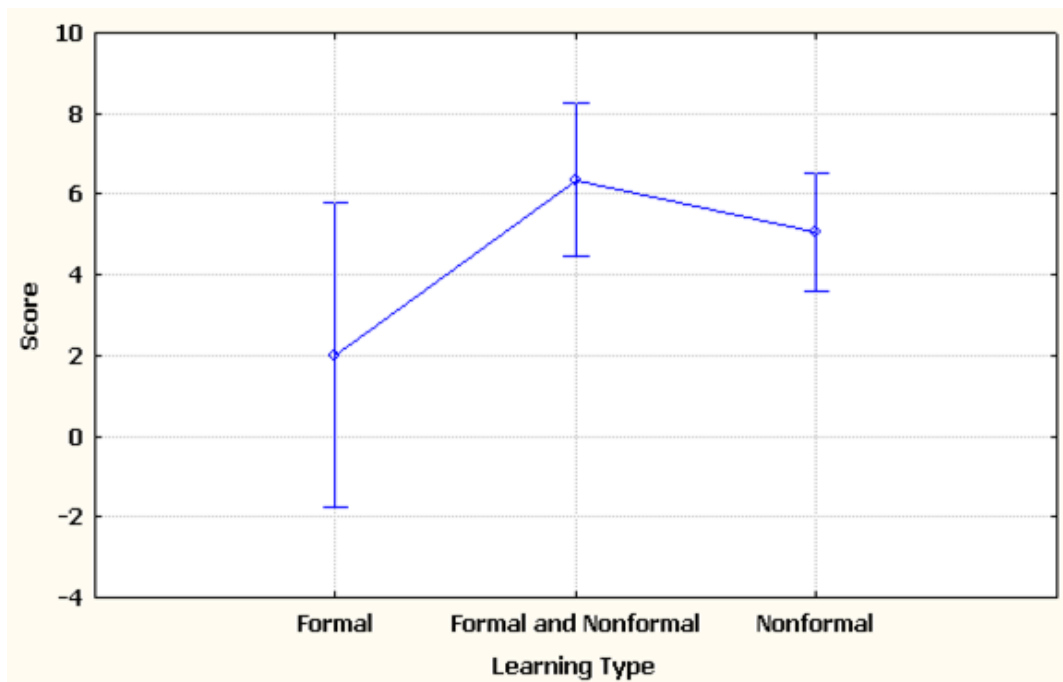


Figure 18

Differences between learning types for non-native French speakers

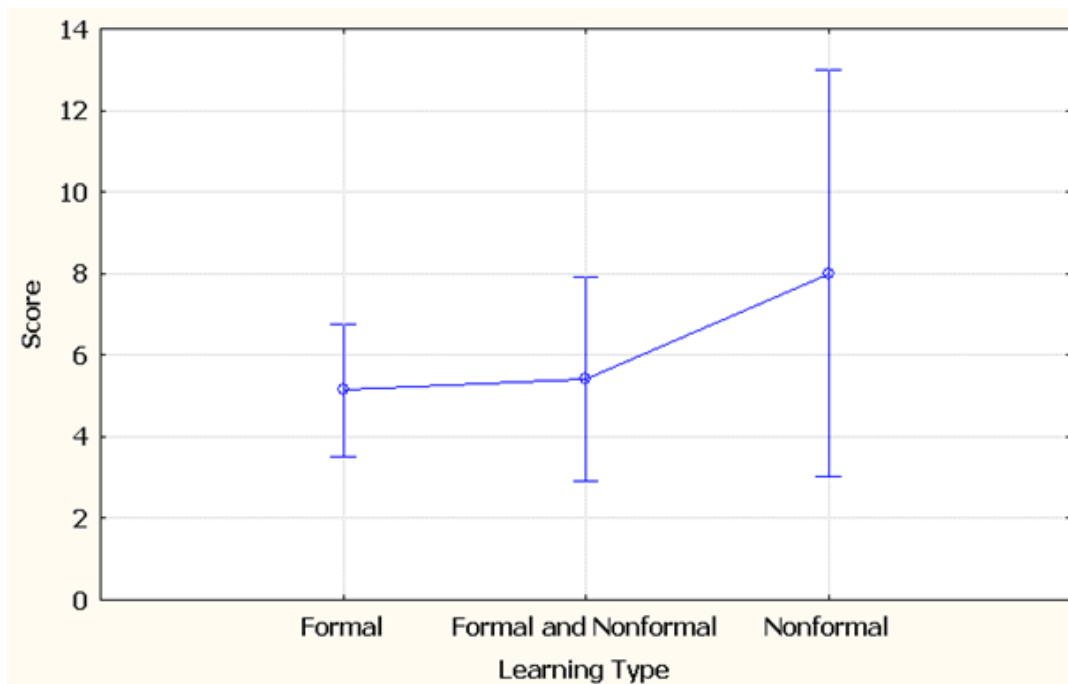
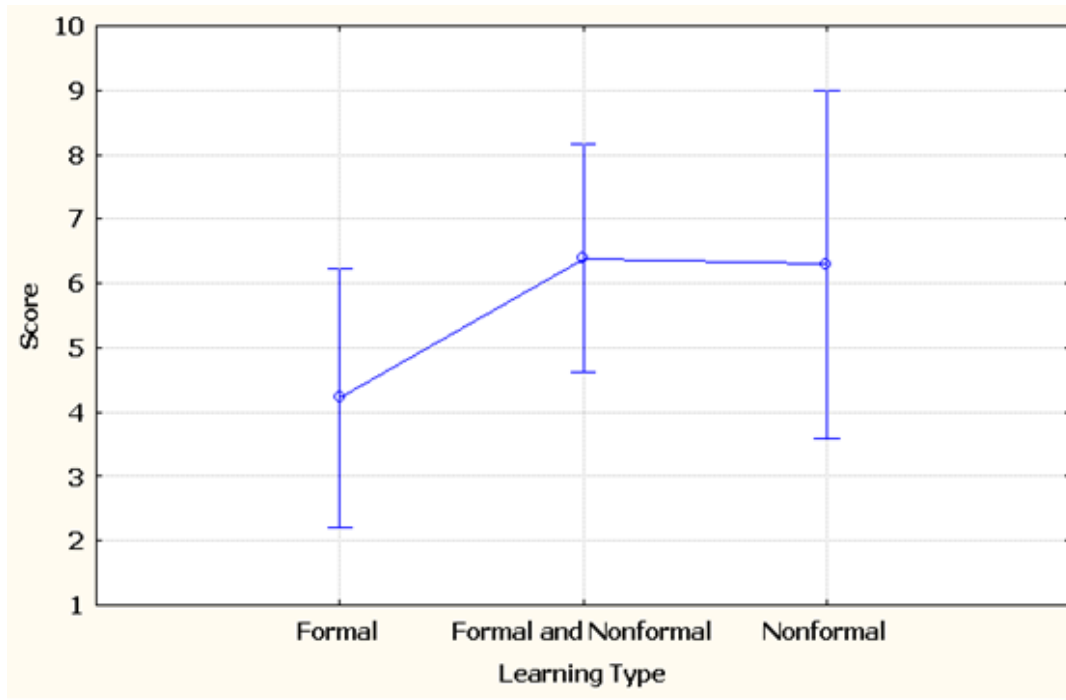


Figure 19

Differences between learning types for non-native English speakers



3.6. Is the Frequency of the Formulaic Expression as a Whole Linked With the Knowledge of Such Expression for Native and Non-native Speakers?

To test if the frequency of the formulaic expression as a whole affects the knowledge of such expression, a separate slopes ANCOVA was conducted. A Levene's test found no evidence of heterogeneity of variance ($F(5,114) = 1.164$, $p = 0.332$). Visual inspection of distributions of scores within each group found them to be approximately normal. Beta weights reflecting the fits of each linear regression between knowledge of expression and frequency of expression are displayed in Table 8. The results showed that there is not a consistent relationship between the frequency of the expression as a whole and its knowledge. Only for native French speakers and non-native Spanish speakers are the fits significant, and the effects sizes are relatively low. Two significant unrelated cases may be a product of random chance.

Table 8: *Effects of the Frequency of the Formulaic Expression as a Whole and its Knowledge*

<i>Language</i>	<i>Origin</i>	β	<i>t</i>	<i>df</i>	<i>p</i>
Spanish	Native	0.093	1.31	112	0.194
	Non-native	0.178	2.49	58	0.014*
French	Native	0.193	2.32	79	0.022*
	Non-native	0.051	0.61	42	0.544
English	Native	-0.053	-0.59	58	0.557
	Non-native	-0.043	-0.48	50	0.633

* $p < .05$

3.7. Is the Frequency of the Head-verb Correlated with the Frequency of the Expression in the Same Corpus?

Correlational analysis using Spearman's rho coefficient was performed to test the covariance between the frequency of the head-verb and the frequency of the corresponding formulaic expression in the same corpus for each language. For Spanish the relationship was significant ($r = 0.52$, $p < .001$) but no significant relationship was found for the French ($r = .003$, $p = .985$) and English ($r = -0.10$, $p = 0.53$) languages.

3.8. Is the Frequency of the Head-verb in the Corpus Correlated With the Knowledge of the Expression?

For a validity check of the Spanish, French and English corpora that were used to research the frequency of the formulaic expressions as a whole, an analysis was

performed to test the relationship among the frequency found in the corpora for the head-verbs used in the study, the frequency of such verbs as per research in several sources on word frequency in the Spanish, French and English languages, and the knowledge of the formulaic expressions tested measured by the scores of the participants in the cloze test. All correlations were found to be significant (See Table 9), which means that as frequency of the verb as measured by the corpora increases so does the frequency of the head-verb and knowledge of the related expression.

Table 9: *Correlation Between the Frequency of the Head-verbs in the Corpora and the Knowledge of the Expressions*

	Knowledge of Expression	Frequency of Head-verb	Corpora Frequency Head-verb
Knowledge of Expression	1	0.37*	0.21*
Frequency of Head-verb		1	0.26*
Corpora Frequency of Head-verb			1

* $p < .05$

3.9. Is the Frequency of the Noun(s) in a Formulaic Expression Linked With the Knowledge of Such Expression for Native and Non-native Speakers?

To test if the frequency of the noun in the formulaic expression affects the knowledge of such expression, a separate slopes ANCOVA was conducted. The assumptions are identical to the analysis conducted to test if the frequency of the formulaic expressions as wholes affects the knowledge of such expressions (3.6), and the same results apply. The results showed that there is not a consistent relationship

between the frequency of the noun in the expression and its knowledge for native speakers of all languages ($ps > 0.05$). For non-native speakers the trend was significant and positive for Spanish ($\beta = 0.188$, $t(58) = 2.26$, $p = 0.026$) and French ($\beta = 0.152$, $t(42) = 1.96$, $p = 0.052$) but not for English speakers ($\beta = 0.099$, $t(50) = 1.23$, $p = 0.220$).

3.10. Research Instruments Reliability Estimates

The research instruments were tested for reliability using the Cronbach's alpha test. The overall value of alpha was high for all three instruments: Spanish ($\alpha = .878$), French ($\alpha = .894$), and English ($\alpha = .896$). These results support these instruments' reliability and internal consistency (J. D. Brown, 2002a) (See Tables 10, 11 & 12 respectively).

Table 10: *Spanish Instrument Reliability*
 $\alpha = .878$

Spanish Item Frequency Band	Item Total Correlation	α if Item Deleted
High-Light	.653	.878
High	.793	.823
Medium	.775	.830
Low	.753	.838

Table 11: *French Instrument Reliability*
 $\alpha = .894$

French Item Frequency Band	Item Total Correlation	α if Item Deleted
High-Light	.809	.847
High	.818	.843
Medium	.840	.840
Low	.689	.906

Table 12: *English Instrument Reliability*
 $\alpha = .896$

English Item Frequency Band	Item Total Correlation	α if Item Deleted
High-Light	.779	.862
High	.820	.846
Medium	.768	.866
Low	.720	.885

Generally, within levels' values of alpha for the different categories of items of all three tests, and all items individually, were also satisfactory. A few items produced independently rather low alpha values. However, removing these items does not contribute much to an increase in the alpha value of the categories containing these items (See Tables 13, 14 & 15 for the Spanish, French and English instruments' reliability results, respectively).

Table 13: *Within Levels Spanish Instrument Reliability*

Frequency Band	Item Head-Verb	Item Total Correlation	α if Item Deleted
High-Light $\alpha = .504$	Tener	.218	.483
	Dar	.340	.407
	Volver	.327	.414
	Contar	.272	.455
	Perder	.229	.477
High $\alpha = .703$	Faltar	.419	.671
	Echar	.366	.693
	Sentar	.457	.655
	Dirigir	.578	.609
	Entregar	.490	.641
Medium $\alpha = .679$	Quemar	.535	.582
	Besar	.229	.715
	Lavar	.468	.613
	Ahogar	.436	.628
	Consultar	.519	.589
Low $\alpha = .715$	Aguar	.539	.639
	Ahuecar	.361	.707
	Empinar	.448	.678
	Colar	.509	.653
	Freír	.527	.645

Table 14: *Within Levels French Instrument Reliability*

Frequency Band	Item Head-Verb	Item Total Correlation	α if Item Deleted
High-Light $\alpha = .753$	Avoir	.540	.708
	Faire	.559	.700
	Prendre	.366	.768
	Passer	.588	.683
	Chercher	.594	.681
High $\alpha = .725$	Perdre	.453	.692
	Tenir	.412	.709
	Raconter	.549	.653
	Casser	.576	.644
	Coûter	.452	.692
Medium $\alpha = .808$	Pleuvoir	.253	.869
	Rouler	.715	.732
	Péter	.691	.747
	Tailler	.669	.747
	Ronger	.706	.735
Low $\alpha = .458$	Cirer	.287	.380
	Rincer	.317	.355
	Déballer	.000	.488
	Dorer	.446	.198
	Barbouiller	.133	.463

Table 15: *Within Levels English Instrument Reliability*

Frequency Band	Item Head-Verb	Item Total Correlation	α if Item Deleted
High-Light $\alpha = .777$	Do	.465	.763
	Make	.596	.720
	Take	.591	.722
	Give	.532	.742
	Keep	.578	.727
High $\alpha = .759$	Let	.575	.698
	Join	.434	.747
	Drive	.640	.673
	Act	.546	.709
	Avoid	.444	.745
Medium $\alpha = .692$	Wipe	.231	.725
	Tighten	.446	.645
	Seal	.432	.649
	Spare	.648	.546
	Scrape	.502	.617
Low $\alpha = .719$	Worship	.526	.656
	Wring	.583	.626
	Pluck	.442	.685
	Goad	.410	.702
	Toe	.488	.674

DISCUSSION

“We have thus abandoned the standard view that the lexicon is memorized and only the syntax is creative. In its place we have a somewhat more flexible theory of linguistic creativity.”
(Jackendoff, 1975, p. 668)

It is clear that formulaic language plays a significant role in human communication. The use of phrasal vocabulary not only improves fluency but also provides socially appropriate frames for communication, and renders the language production process efficient from the perspective of both the speaker and the listener.

An important issue that has been brought forward in this research is that pertaining to the definition of formulaic language. As has been noted, formulaicity is a multi-layered phenomenon and cannot be defined on the basis of a sole criterion. Therefore, in order to include the different facets of formulaic language in one definition, it has been recently more comprehensively described as a phenomenon comprised by two empirical domains: the domain of the phrasal lexicon consisting of the speaker’s mental collection of lexical items that have syntactic rather than morphological structure, i.e., phrasal lexical items, and the domain that relates to the performance of the speaker in the oral and written use of these phrasal lexical items (Kuiper, to appear). It is expected that sustained empirical investigation of each of both domains and their interaction will elucidate some of the many remaining questions about formulaic language, especially those regarding its acquisition not only by native speakers but also by non-native speakers.

It has also been observed that the general perception of second language speakers' language production improves when they integrate formulaic expressions in their speech or writing (Boers et al., 2006; Ohlrogge, 2009). Thus, a better understanding of the mechanisms by which people acquire formulaic language would have significant implications for second language pedagogy.

As to the empirical grounds of this study, while linguistics and psycholinguistics empirical research has revealed that formulaicity is a central feature of language production and comprehension, and phrasal vocabulary is prevalent in the adult speech of every linguistic community (Corpas Pastor, 2003; Jackendoff, 1995; Kuiper et al., 2009; Pawley & Syder, 1983; Schmitt & Carter, 2004; Sinclair, 1987, 1991, 1996; Sprenger et al., 2006; Van Lancker-Sidtis & Rallon, 2004; Wray, 2002; Wray & Perkins, 2000), evidence shows that there are significant differences in the acquisition and use of formulaic language between native and non-native speakers of a language, with native speakers having a considerably larger amount of phrasal vocabulary than non-native speakers (Abel, 2003; Bishop, 2004; Kuiper et al., 2009; Pawley & Syder, 1983; Van Lancker-Sidtis, 2003).

In addition, the results of the studies by Kuiper et al. (2009) and Escaip (2008) suggest the existence of close links between the frequency of usage of the head-verbs of formulaic language items and the mastery of such items by both native and non-native speakers of English and Spanish.

Finally, it has been proposed that formulaicity is age graded. Thus, although the acquisition of formulaic language starts in childhood, much of it is attained in late adolescence and adulthood (Escaip, 2008; Kuiper et al., 2009; Wray, 2002). However, whereas in Kuiper et al. (2009) a decline in the knowledge of formulaic expressions, predicted on the premises that lexical retrieval becomes slightly less efficient at old

age, was observed for older native English speakers (<65 years old), no such decline was found by Escaip (2008) in her study for the Spanish language.

The present research broadened the experimental design carried out in the studies by Kuiper et al. (2009) and Escaip (2008) to investigate the propositions above for the English, Spanish and French languages, in an attempt not only to empirically support them, but also to further strengthen the argument that the processes of acquisition of formulaic language across diverse linguistic systems function in a very similar way (Corpas Pastor, 1995, 2003). Furthermore, this study extended its empirical scope to investigate other important matters related to the acquisition of formulaic expressions such as the effects of time and type of learning a language on the mastery of formulaic expressions by non-native speakers, and the frequency effects of the formulaic expressions as wholes, and of the nouns contained in them, on the knowledge of such expressions by both native and non-native speakers. Lastly, due to the promise that cloze testing holds for the investigation of the acquisition of formulaic lexical items (Kuiper et al., 2009) by both native and non-native speakers of a language, and to the consistent results yielded by the cloze instruments administered in the studies by Kuiper et al. (2009) and Escaip (2008), and the present investigation, the Spanish, French and English instruments used in this research were tested for reliability using the Cronbach's alpha test.

This section will firstly present a summary of the results, followed by the discussion of the study's main hypotheses on formulaic language and the additional empirical issues raised in this study. Next, the results of the reliability analyses that were carried out for the Spanish, French and English research instruments used in this study will be discussed. Then, some practical implications of the findings for the pedagogical field of phrasal vocabulary as well as some guidelines for further

research will be presented. Finally, some strengths and limitations of the present study will be pointed out.

4.1. Summary of the Results

As predicted, native speakers were acquainted with more of the formulaic expressions tested and were able to recall a higher number of the head-verbs gapped in the cloze test than non-native speakers of the three different languages studied in this research: Spanish, French and English. These results support the prediction that non-native speakers of a particular language acquire a significantly less extensive phrasal vocabulary than native users of the language.

In addition, this study's findings generally support the prediction that the frequency of usage of the head-verbs contained in formulaic language items is closely linked to the mastery of such items, given that all participants, both native and non-native speakers of the three languages investigated – Spanish, French and English – achieved generally a significantly higher number of correct answers in the cloze test for the formulaic sequences containing higher frequency verbs than for the expressions that included lower frequency verbs.

Moreover, as in both preceding studies, the number of correct answers of native speakers in the cloze test increased significantly with age for all three languages. These results support the prediction that the amount of formulaic language acquired by native speakers is positively correlated with age, that is, older people know considerable more phrasal vocabulary items than younger people. In addition, as in the original study for the English language, a decline in the number of correct

answers was found for native English speakers at the upper end of the age scale, but such decline was not found for native speakers of the Spanish and French languages.

Besides, the number of correct answers of non-native speakers in the cloze test increased significantly with duration of learning and/or speaking the language for Spanish, but not for French or English, which were, however, approaching significance. However, no age effects were found on the mastery of formulaic expressions for non-native speakers of any of the languages investigated.

Furthermore, learning type (formal, informal or a combination of both) was found to have no significant effects on the knowledge of phrasal vocabulary for non-native speakers of Spanish, French or English. However, the effect of time learning on the total score across learning types was found to have an effect.

Also, results showed that there is not a consistent relationship between the frequencies of the expressions as wholes and their knowledge by both native and non-native speakers of a language.

The links between the frequency of the head-verb and the frequency of the expression in the same corpus were also tested for all three languages, with results indicating a significant relationship for Spanish, but not for the French and English languages.

Additionally, the correlation analysis performed to test the relationship between the frequencies found in the corpora for the head-verbs of the formulaic expressions used in the study, the frequencies of these verbs as per investigation in other sources of word frequency in Spanish, French and English, and the knowledge of the target formulaic expressions measured by the scores of the cloze instruments, yielded significant results in all cases. These results support the reliability of the frequency values that were used in this research, independently of their source.

As to the links between the frequencies of the nouns contained in the formulaic expressions and the knowledge of such expressions by native and non-native speakers of a particular language, no consistent relationship was found either. The trend was only significant and positive for non-native speakers of Spanish and French, but not for native speakers of the three languages and non-native speakers of English.

Finally, the reliability estimates obtained using the Cronbach's alpha test were high for the three research instruments used in the current study, supporting these instruments' reliability and internal consistency.

4.2. The Research Hypotheses

4.2.1. There are significant differences between the degree of acquisition of formulaic sequences in native and non-native speakers of a language.

There is ample evidence of the great capacity of language users to learn and store in the mental lexicon a vast number of fixed expressions in their native language (Jackendoff, 1995; Kuiper et al., 2009; Mel'Cuk, 1995; Van Lancker-Sidtis & Rallon, 2004; Wray, 2002). "And there are parallels in any language" (Jackendoff, 1995, p. 135). Whereas this seems to be true for native speakers, important evidence reveals that non-native speakers have great difficulties in the acquisition of formulaic language, and that even proficient foreign language or second language learners store in their mental lexicon a considerably smaller amount of phrasal vocabulary than native speakers of the language (Abel, 2003; Bishop, 2004; Kuiper et al., 2009; Pawley & Syder, 1983; Van Lancker-Sidtis, 2003; Wray, 2000a, 2002). Thus,

although proficient non-native speakers may be able to acquire over time a large number of formulaic sequences in their second language, they exhibit, in general, deficiencies in their intuitive use and fluency of formulaic utterances, in comparison with native speakers (Kuiper et al., 2009).

The results of the present study fully support these propositions, given that the native speakers of the three languages investigated – Spanish, French and English – achieved significantly higher scores in the cloze test than the non-native speakers of the study (See *Figure 14*). Native speakers knew a large number of the verb plus complement formulaic sequences that were being tested, and were able to recall many of the head-verbs of these expressions that were gapped in the corresponding cloze test. The means of the total of correct answers for native speakers of each language were fairly high and closely related (Spanish, 12.34; French, 13.89; and, English, 13.31), with an overall mean of 13.06, representing the native speakers' acquaintance with about two thirds of the formulaic language items in the cloze tests. On the other hand, the means of correct answers for non-native speakers revealed the knowledge of only one fourth of the phrasal lexical items tested for each of the languages examined (Spanish, 5.24; French, 5.42, and, English, 5.61), with an overall mean of 5.41 (See Tables 5 & 6).

A Factorial ANOVA analysis confirmed the significant differences between the scores of native speakers and non-native speakers of the three languages of the study. As to the significant heterogeneity of variance found between groups, it was concluded that it did not represent a major problem for the interpretation of these results, since this violation was most likely due to the differences in sample size between groups.

These results are parallel to those of Kuiper et al.'s (2009) and Escaip's (2008), where native speakers had much higher scores than non-native speakers of English and Spanish in the respective cloze test. In Kuiper et al.'s (2009) investigation the means of correct answers for native speakers of English were 11.9 for adolescents, and 16.4 for adults, whereas for the non-native group the means of correct answers were 0.8 for adolescents, and 1.8 for adults. As for the research by Escaip (2008), where, as in the present study, age was not categorized into groups but set as a continuous variable for purposes of statistical accuracy, the mean of the total correct answers for native speakers of Spanish was particularly high, 15.2, representing the native participants' acquaintance with over three quarters of the formulaic language items being tested, whereas the mean of correct answers for non-native speakers was 5.4, revealing this group's knowledge of only one fourth of the test items (See Table 1).

It can be observed a notably larger gap between the scores of both origin groups in Kuiper et al.'s (2009) study, whereas such gap is not as large in both Escaip's (2008) research and the present study. A possible explanation may be related to the differences in the length of time that non-native participants in these three studies had spent among the target language community, believed to be considerably larger for the non-native speakers of the two latter studies. However, this is a conjecture, as the time factor was not controlled in Kuiper et al.'s (2009) investigation. The time variable will be addressed in more detail later in this chapter.

In addition, it can be noted that the mean of the overall performance of native speakers of all three languages in the present study (13.06) (See Table 6) is to a certain extent lower than the means of the performance of native speakers in the previous investigations for English (11.9, adolescents; 16.4, adults) (See *Figure 12*)

and Spanish (15.2) (See Table 1). Roughly, native speakers of all languages in this research knew about two thirds of the formulaic sequences tested, whereas this proportion in the former study for the Spanish language, which used the same quantitative methods than the present study, was over three quarters of the expressions. This fact may have a number of possible explanations:

1. Regarding the Spanish part of the study, a large proportion of the sample of Spanish native speakers for this research was based in the Yucatán peninsula, a region of Mexico that is characterized by some peculiarities in its inhabitants' language use which render their speech somewhat different to the speech used by the linguistic community in other parts of the country. Therefore, some of the items selected for the cloze test may not have been conventional formulaic expressions used in this particular geographic area of Mexico, and, thus, not well-known among the members of the speech community, while this was not the case for the previous investigation for Spanish, since most participants were people living in Mexico City, the place of origin of the researcher and creator of the test. Furthermore, a significant part of the sample of native speakers of Spanish in this investigation was comprised of young university students, bringing down the mean age value to 30.35 (See Table 4), in contrast to the mean age value of 39.01 of the previous study. This fact may have had an impact on the scores as a function of the effects of age on the knowledge of formulaic language, since younger people are believed to have a smaller repertoire of formulaic expressions than older people. The age-graded character of formulaic language will be dealt with in more detail in a further section of this chapter.

2. With regard to the French survey, even though there is not a previous equivalent study to compare it with, an analogous performance to native speakers of other languages in similar former studies could be reasonably expected. However, the scores of French native speakers, though comparable to those ones by native speakers of Spanish and English in this study, were lower than the scores of the preceding investigations by Kuiper et al. (2009) for English, and Escaip (2008) for Spanish. Subsequent feedback and a *post hoc* examination of the results of the French participants in the cloze test revealed that two of the formulaic sequences containing low frequency head-verbs were very old expressions⁴⁹, hardly used by native speakers in the French language community. This resulted in extremely low scores for the category containing expressions with low frequency verbs, lowering the average of the participants' overall performance score in the test. On the other hand, the age factor is not believed to have affected the results, since the mean age of native French participants in the study is 38.48 (See Table 4).
3. As for the performance of native English speakers, no direct comparison can be established with the original study for the English language since the quantitative methods used in the analysis of the results in that research were different to those ones used in the present investigation. However, based on the assumption mentioned above that a similar performance would have to be expected for native speakers of any language, this variation may be simply explained by the randomness of the sample, which happened to be constituted by a number of individuals less acquainted with some of the idiomatic expressions tested. Respecting this, it is noteworthy to mention that a large

⁴⁹ Such expressions are: *Déballer ses salades* and *Barbouiller du papier*.

number of native participants of English were recruited for this study from the working population of a shopping mall in Christchurch, New Zealand. Since, as noted in the Method section, educational status was not controlled in this investigation, it may have been that many of these participants did not have a higher level of education where people are expected to not only acquire the knowledge and skills of their field, but also the language that enables them to express their ideas in the form that is expected, with formulaic sequences playing an important role for this (Jones & Haywood, 2004). Hence, highly educated people are expected to know more formulaic expressions than people with a lower educational status (or it may be that an educated population knows a slightly different set of phrasal lexical items from the cross section of the community). Again, age is not considered to have been an influential factor on the scores, as the mean age of native participants in the English part of this study is 39.95, i.e., 40 years (See Table 4).

Independently of the reasons for the disparities between the scores in the cloze tests of native speakers in this study and those ones in previous investigations, it is obvious that these differences are not significant. Furthermore, the results for each of the languages in the current investigation are remarkably parallel, a fact that partially supports the proposition that the mechanisms for the acquisition of formulaic language across diverse linguistic systems function in a very similar way (Corpas Pastor, 1995, 2003). Most importantly, the results still clearly show the significant differences that exist on the knowledge of formulaic language between native and non-native speakers of the languages investigated: Spanish, French and English.

In relation to this, one may wonder if the percentage of correct answers achieved by non-native speakers of the three different languages in the study represents a substantial number in terms of their overall knowledge of formulaic expressions, or shows a major deficit in their formulaic language proficiency. On the one hand, 25% may appear to be a sizeable number of formulaic expressions mastered by the non-native speakers in this research. But on the other hand, this figure will always be relative to the particular standard it is contrasted against. If, for instance, we take into consideration Pawley and Syder's (1983) estimate of "several hundreds of thousands" (Pawley & Syder, 1983, p. 213) of sentence-length expressions that are familiar to an ordinary adult speaker, then there still are several hundreds of thousands of phrasal lexical items that non-native speakers do not know. Similarly, Mel'cuck's (1995) suggestion that multi-word expressions outnumber single words by a ratio of at least 10 to 1 makes this 25% seem a rather massive amount, even if we take into account the quite conservative Goulden et al.'s (1990) estimate that suggests that well-educated adult native speakers of English have a vocabulary of around 17,000 base words.

In addition, the formulaic sequences tested in this research are not representative of all the formulaic lexical items existent in the corresponding speech community, since, firstly, they belong to a specific type of multi-word expressions, i.e., idioms, with a particular syntactic configuration (verb plus complement); and, second, they are non-specialised lexical items likely to be known to individuals of the speech community⁵⁰, within a wide range of age. Therefore, besides pointing out the large gap that exists between native and non-native speakers on their knowledge of formulaic sequences, it is not possible to make any generalizations about the

⁵⁰ With the exception of the two French idiomatic expressions previously specified.

magnitude of the knowledge of formulaic language by non-native speakers of a language from the results of this study.

The fact is that, to date, it is not possible to reach a reliable approximation on the number of formulaic lexical items existent in a speech community, or stored in the mental lexicon of its speakers. On the other hand, based on relevant evidence yielded by psycholinguistic research, e.g., superlemma theory, which reveals that although formulaic expressions have one single lexical entry, the individual constituents of these expressions play an important role for their access, production and interpretation, the examination of the effects of the single words contained in such expressions on their acquisition and use seems to be a more sensible (and practical) approach to comprehend the mechanisms of formulaic language acquisition, and to reduce the large gap that exists between native and non-native speakers on the knowledge of formulaic expressions. The frequency effects of the head-verbs of phrasal idiomatic expressions, which are at the core of one of the main propositions of this study, will be discussed in more detail in the following section of this chapter.

The lack of formulaicity in discourse is supposed to pose a relevant problem for the socialisation processes of second language learners within the target language community, given that formulaic language plays an essential role in central functions of social interaction (Schmitt & Carter, 2004; Wray, 2002; Wray & Perkins, 2000). However, as per informal observations of some of the administrators of the surveys, including the researcher, many non-native participants in the study do not seem to experience this kind of trouble because they have been observed to interact with the other members of the language community, and carry out their personal and work activities without any apparent impediments, compensating with their language proficiency for their lack of formulaicity (evident in their scores in the corresponding

cloze test). These are obviously subjective appreciations but are not surprising as it is known that language functions in social interaction can also be achieved using novel language (Wray, 2002). Thus, language proficiency may, in many cases, effectively compensate for the absence of nativelike proficiency in formulaic language.

4.2.2. The frequency of usage of the head-verbs contained in verb plus complement formulaic sequences is tightly linked to the acquisition of such sequences.

With regard to the acquisition of vocabulary in a second language, research evidence has revealed that learners are highly sensitive to frequency effects in language (Nick C. Ellis, 2002; Wolter & Gyllstad, 2013), and that “language processing is intimately tuned to input frequency” (Nick C. Ellis, 2002, p. 143). Ample evidence shows that word frequency plays an important role in the acquisition of vocabulary: higher frequency words are generally learned before low frequency words (Schmitt et al., 2001). Furthermore, lexical frequency has been found to affect language comprehension (Nick C. Ellis, 2002).

However, the size of single-word vocabulary does not seem to be correlated with the amount of phrasal vocabulary that a second language speaker possesses (Kuiper et al., 2009), nor is it a strong predictor of the ability for acquiring formulaic sequences (Schmitt, Dörnyei, et al., 2004). Topics such as language aptitude, language motivation, language attitudes, sociocultural adaptation and learning strategies, among others, have been explored in the search of facilitators for the acquisition of formulaic expressions by non-native speakers of a language, without having found strong evidence that points conclusively to any particular factors that

assist this acquisition (Kuiper et al., 2009). But the answer, or an important part of it, is likely to lie within the structure of formulaicity: the characteristics of its constituent words.

It has been claimed that the effects of lexical frequency extend beyond morphologically simple lexical forms (morphemes and single words), and includes complex words as well as multi-word expressions (Escaip, 2008; Jansen & Barber, 2012; Kuiper et al., 2009; Libben & Titone, 2008). Thus, could the frequency of usage of the words contained in formulaic sequences be related to the acquisition of such sequences? And, if this were the case, would this fact provide useful insights into the processes that facilitate the learning of formulaic language?

Kuiper et al. (2009) posed the questions above regarding the English language, and used cloze procedure to test these links. Their findings revealed that the expressions containing high frequency verbal items were easier to recall than the expressions with low frequency verbs. In a replication of Kuiper et al.'s (2009) study, Escaip (2008) found the same pattern of verbal frequency, extending these findings to the Spanish language. The present research constituted in essence a replication of those investigations, and one of its main purposes was to investigate if such pattern of verbal frequency could be observed not only in the English and Spanish languages, but also in French.

As in the previous investigations, the results of this study generally supported the prediction that the frequency of the head-verbs is tightly linked to the acquaintance with the expressions that contain them, as all participants, independently of their origin and their native language, achieved a significantly higher number of correct answers for the cloze items including high-light frequency verbs than for those with low frequency verbs. In Table 7 it can be observed that native speakers of

Spanish had a mean of correct answers of 3.01 for expressions with high light frequency verbs, and a mean of 2.35 for expressions containing low frequency verbs, whereas non-native speakers of this language had a mean of 1.86 for high light frequency verb expressions versus a mean of .51 for expressions with low frequency verbs⁵¹. As to the French language, native speakers achieved a mean of 4.4 for expressions containing high light frequency verbs, and a significantly lower mean of 1.6 for expressions with low frequency verbs, while the means for non-native speakers were 1.95 for the high light frequency category expressions, and .56 for expressions that had low frequency verbs. Finally, the means of native speakers of English were 4.44 for formulaic sequences containing high light frequency verbs and 2.07 for expressions with low frequency verbs, whereas non-native speakers of this language reached a mean of 2.22 of correct answers for the expressions that contained a high light frequency head-verb, and a mean of .57 for low frequency verb expressions.

The numbers above only take into consideration the means of correct answers to the expressions with head-verbs placed at both the highest and the lowest ends of the frequency scale. However, from visual examination of the performance means obtained by native and non-native speakers of Spanish, French and English in the different frequency categories (See Table 7), the frequency effects of the head-verbs of the expressions tested on the knowledge of such expressions are evident, with generally larger means of correct answers in the higher frequency categories, than in the lower ones. These numbers also reflect the significant differences existent in the mastery of formulaic expressions between native and non-native speakers of the languages investigated.

⁵¹ Recall that the cloze test presented twenty formulaic expressions, categorized into four groups of five expressions each, according to the frequency of their head-verbs: High Light, High, Medium and Low.

Figure 15 shows the means of the number of correct answers for each of the four categories of formulaic expressions according to their head-verb frequency, obtained by the native and non-native speakers of Spanish, French and English that participated in this research. Besides the significant differences between the scores of the different origin groups, the predicted trend can generally be observed for native speakers of French and English, and non-native speakers of the three languages, indicated by a predominantly linear descending pattern where expressions containing high light frequency verbs, considered as the easiest ones on a difficulty scale, start at the highest point of the mean of correct answers, ending at the lowest point corresponding to the means of correct answers obtained for expressions including low frequency verbs, the hardest ones on the scale. However, it can also be observed that all the participants, with the exception of the non-native speakers of French, scored slightly higher in the category comprised of the expressions containing medium frequency head-verbs than in the category of expressions with high frequency verbs, contrary to what it was expected.

A plausible explanation of this effect may be that the gaps between the frequency of the different head-verbs of the expressions located in the medium and high categories are not large enough to make the intervals more reliable. Nevertheless, it is important to note that the differences of the means in the three highest frequency verbal categories are marginal, given that native speakers of all languages achieved a considerably larger number of correct answers for the expressions in all these three frequency groups, producing the ceiling effect that is observed in *Figure 15*.

On the other hand, native speakers of Spanish produced an incongruent flat pattern across the three easiest categories, scoring higher on medium frequency, followed by high frequency, and then high light frequency verbal items at a lower

position, inconsistently with the predictions. A possible explanation of this effect may be found by closely examining the individual items of the test. An unpublished work prepared by a postgraduate student of Linguistics at the University of Canterbury (Brandt, 2008), which carried out a similar procedure to the one used in Kuiper et al.'s (2009) research, with a small sample of university students between the age of 19 and 26 years, all native speakers of German, found a similar incongruence on the verb frequency continuum. The author inspected some of the individual items producing this pattern, and concluded that cross-linguistic influence and the alternative choice preferences for some of the expressions had caused these unexpected results. When these items were taken out of the graph, the pattern generated looked much more as predicted.

Although a thorough investigation of the individual items to be tested was conducted before designing the Spanish cloze instrument for the previous research, it was found that two expressions containing high light frequency verbs were incorrectly answered in many cases, independently of the origin of the participants. A *post hoc* informal examination of these expressions revealed that one of them, the expression *tener ángel*, includes one collocate, *ángel*,⁵² that evokes a range of verbal alternatives given the context provided. Thus, although the verb *tener*⁵³ is among the more frequent words used in Spanish, most participants did not recall it due to the indistinct character of the expression within the context of the story. The other expression, *volver la vista atrás*, contains a verb with multiple meanings⁵⁴, a fact that could have

⁵² *Ángel* means 'angel' in English.

⁵³ *Tener* means 'to have', but this verb is not used as an auxiliary verb in Spanish as it is used in English for some verbal tenses.

⁵⁴ *Volver*: to turn, to turn over, to turn inside out; to return, to come or go back; to restore; to cause, to make; *volver a*: to do again.

caused confusion when trying to recall the correct word. As in the case of the original research, these two expressions generated a significant decrease in the means of correct answers for the high light category that was reflected in the final results of this research.⁵⁵ Yet, it is not possible to reach valid explanations through a merely informal analysis of the expressions involved, and a more comprehensive study of the characteristics of the expressions to be included in this particular cloze test is recommended for future research. One approach is to conduct careful corpus-based investigation on each item such as that conducted by Fellbaum and her associates (2007).

Another plausible explanation derives from the semantic attributes of the verbs in question. Sinclair (1991) argues that there is a tendency to progressive delexicalization for frequent words. “The more frequent a word is, the less independent meaning it has, because it is likely to be acting in conjunction with other words, making useful structures or contributing to familiar idiomatic phrases” (Sinclair, 1991, p. 113). Kuiper et al. (2009) declare that high frequency verbs such as *make*, *look*, and *do*, constitute an essential characteristic of informal spoken discourse and are used in countless formulaic expressions. Altenberg & Granger (2001), cited in Kuiper et al.’s (2009) study, found that foreign language learners have great difficulty using formulaic sequences that contain the verb *make*, particularly the delexicalized uses. Thus, high-light frequency verbs are more likely to be known by the speakers of a language, but it is precisely this high ‘delexicalizing’ frequency that lessens their semantic weight, allowing the legitimate use of other variations, which may seem equally, or even more, plausible.

⁵⁵ For some reasons that will be presented in the limitations section of this work, it was decided to keep the high light frequency items that have been discussed above. However, the results obtained from the application of the Spanish instrument in its original design did not represent a major hindrance for this research, and the results generally supported the predictions formulated.

Notwithstanding the issues mentioned above, the overall pattern obtained from the examination of twenty formulaic expressions according to the frequency of their head-verbs corresponds to the expected pattern for all participants of every language in the study.

A Separate Slopes ANCOVA analysis conducted to test if the frequency of the head-verb of an expression affects the knowledge of such expression after accounting for the differences between languages and origin, again confirmed the significant differences in the knowledge of formulaic expressions between native and non-native speakers of the different languages, finding no significant differences between languages. The ratios of the total score in the cloze test to the number of formulaic expressions being tested across all the frequency categories calculated for native and non-native participants in this research (See Table 5) further highlight the existence of these significant differences between native and non-native speakers, independently of the language in question. Remarkably, these ratios remain constant for the different origin groups of the three languages examined:

Spanish: Non-native speakers, .26 to 1 vs. native speakers, .61 to 1.

French: Non-native speakers, .27 to 1 vs. native speakers, .69 to 1.

English: Non-native speakers, .26 to 1 vs. native speakers, .66 to 1.

All languages: Non-native speakers, .27 to 1 vs. native speakers, .65 to 1.

A second Separate Slopes ANCOVA analysis run to test whether the frequency of the head verb in the expression predicted the number of times that expression was answered correctly confirmed that as the rarity of the head verb increased, the knowledge of such expression significantly decreased. *Figure 16* shows

the significant effect of the frequency of the head-verbs on the knowledge of the expressions tested. The direction of the slopes clearly shows the predicted trend consisting of a linear descending pattern starting from the highest point corresponding to the proportion of correct answers for the expressions with higher frequency head-verbs, considered as the easiest ones on a difficulty scale, and going down to the lowest point corresponding to the expressions that include low frequency verbs, the hardest ones on the scale. This pattern can unmistakably be observed, as predicted, for the three different languages investigated in this research.

An interesting reflection on the issue of the frequency effects observed in the performance of non-native speakers is that if they feel more confident by concentrating more on single words than on strings of words when learning and using their second language (Kuiper et al., 2009; Siyanova & Schmitt, 2007), it seems sensible that they better recall sequences that contain well known single words they have encountered previously and learned by virtue of their high frequency. However, from the results of this research, and those found by Kuiper et al. (2009) and Escaip (2008), it is clear that the frequency of the head-verb contained in a formulaic expression seems to affect the knowledge of such expression not only by non-native speakers but also by native speakers of the three languages examined: Spanish, French and English (See Table 7 and *Figure 16*). Hence, the factual explanation needs to go beyond the suggestion mentioned above for non-native speakers of a language, since it is clear that native speakers' do not only focus on single words, and that they naturally and profusely include formulaic language in their spoken and written discourse.

Thus, how do we explain the fact that the frequency of the head-verb of a verb phrase lexical item appears to be a good predictor of that verb phrase's learnability for

both native and non-native speakers of a language? Kuiper (personal communication) suggests that a plausible explanation for the preferential verb frequency effects in verb phrase idioms may lie in the redundancies they provide if one extends the theory of lexical redundancy as proposed by Jackendoff (1975). Therefore, before attempting to answer this question, let's firstly outline Jackendoff's (1975) notion of lexical redundancy rules and their role on the learnability of idioms, among other lexical structures comprised of related lexical items in accord with a native speaker's intuition.

Jackendoff (1975) claims that "it makes sense to say that two lexical items are related if knowing one of them makes it easier to learn the other – i.e., if the two items contain less independent information than two unrelated lexical items do" (Jackendoff, 1975, p. 641). According to him, the relationships between lexical items that a speaker intuitively determines are determined by rules that express generalizations within the lexicon: the lexical redundancy rules. Jackendoff's (1975) preferred approach to lexical redundancy rules is the full-entry theory, which assumes that related lexical concepts have fully specified lexical entries.

Jackendoff (1975) proposes that idioms are lexical structures comprised of words already stored in the mental lexicon and constructed, generally, in accordance with syntactic rules. Because their meanings are not directly associated with the individual meanings of the composing words, they are unpredictable and speakers need to learn which lexical constructions are idioms and what they mean. Jackendoff (1975) affirms that the 'logical place' to store idioms is the speakers' mental lexicon, and that the lexical storage mechanisms activated for idiomatic expressions should be no different to those set in motion for single words. However, instead of storing them onto a single node, as for ordinary words, idioms are inserted onto 'a complex of

deep-structure nodes' (Jackendoff, 1975, p. 662) that conforms to the syntactic structure of the individual lexical entries.

On these grounds, phrase-structure rules, i.e., syntactic base rules that say, for instance, that a verb followed by a noun phrase forms a verb phrase, act on the individual constituents of an idiom as they would normally do for a novel expression, but also become redundancy rules by relating the words already existent in the lexicon to the lexical components of such idiomatic expression. The redundancy rule in a full-entry theory "designates as redundant that information in a lexical entry which is predictable by the existence of a related lexical item; redundant information will not be counted as independent" (Jackendoff, 1975, p. 643). According to Jackendoff (1975), base rules can only be used as redundancy rules if lexical entries go beyond the single word level. While redundancy rules can be morphological or semantic, it is only the first type that applies in the case of idioms, since semantic redundancy rules would cause the literal meaning to take over the figurative meaning of the idiom, which in that case would stop being an idiom. Jackendoff (1975) concludes that "lexical redundancy rules are learned from generalizations observed in already known lexical items. Once learned, they make it easier to learn new lexical items: we have designed them specifically to represent what new independent information must be learned" (Jackendoff, 1975, p. 668).

Jackendoff's (1975) notion of morphological redundancy rules seems to provide some good clues as to why the frequency of the head-verbs of a verb phrase lexical item is a good predictor of its knowledge: Since word frequency plays an important role in vocabulary acquisition (Nick C. Ellis, 2002; Nick C Ellis, 2002; I. S. P. Nation, 2001b; Schmitt et al., 2001; Wolter & Gyllstad, 2013), it is likely that speakers' lexical repertoire contains more frequent lexical items than low frequency

ones. Hence, it is expected that an individual, either native or non-native speaker of a language, will know more high frequency verbs than low frequency ones. Now, if an already known lexical item makes it easier to learn new related lexical items, in accordance with the redundancy rules, then having acquired a particular verb will facilitate the speakers to learn the associated words within a syntactic construction, such as an idiom.

In addition, verbs entail a significant amount of syntactic structure (for example that they take subjects and auxiliary verbs), more than other content words such as nouns, adjectives or adverbs, and even more than function words. In Schmitt's (2005) view on storage and access of idioms, function words are not as useful as content words in accessing an idiom. He believes that "most templates have a 'core collocation' (usually made up of content words) which reliably leads to access of the template" (Schmitt, 2005, p. 33). Therefore, if a verb is a keynote to the access of the template of a verb phrase lexical item, when already known, its properties are redundant and spread over the whole phrasal lexical item, facilitating not only its retrieval but also its acquisition, in consistence with Jackendoff's (1975) propositions of morphological redundancy rules. But, how do the syntactic properties of a head-verb become redundant and spread over the different constituents of a verb phrase lexical item facilitating its acquisition? The answer to this question may lie in the superlemma theory (Kuiper et al., 2007; Sprenger et al., 2006).

As mentioned in a previous section of this work, superlemma theory complements Cutting and Bock's (1997) model of idiom production that assumes that idioms are represented in the mental lexicon with their own lexical concept nodes by introducing a *superlemma* which constitutes a separate representation of the idiom at the lexical-syntactic level. While the idiosyncratic semantic properties of an idiom lie

in its lexical concept node, the superlemma node accommodates all the syntactic constraints of such an idiomatic expression. The superlemma node specifies the syntactic properties of the simple lemmas that are comprised in the idiom, and the syntactic relationships between them. In turn, the superlemma activates the individual lemmas, which also contain the syntactic information of the separate words as they exist in the lexicon. Thus, each word has its own lexical concept to which the lemma is linked, and that lemma is also linked to the superlemma, i.e., the syntactic information of each lemma appears twice in the lexicon of a native speaker. From a full-entry theory perspective, it does not seem unreasonable to suggest that the syntactic information of the individual words of an idiom becomes redundant as a result of this ‘double’ activation.

For instance, in the lexical entry in the mental lexicon of a verb-headed idiom, say *stir the pot* that means ‘to agitate and keep a dispute going’, the verb has a lexicalized object. The superlemma of this expression contains the information about this expression’s particular syntactic configuration, which is a verb plus direct object. If one looks up the lexical entry of *stir* on its own in the mental lexicon, it will be clear that it is a verb that takes objects (i.e., a transitive verb – one has to ‘stir something’). Thus, the information in the superlemma is partially redundant. The fact that it has the verb *stir* in it allows the speaker to predict that it will have an object in a syntactically well-formed idiom, which it does in this case.

Summarizing all these notions above:

1. Content words perform a central role in idiomatic expressions.
2. Verbs are ‘stronger’ content words since they contain significant amounts of syntax in contrast to other kinds of content words.

3. The higher the frequency of the verb the more likely its properties are to have become fixated in the speaker's lexicon.
4. An already known verb will make it easier to learn the associated lexical items in a syntactic construction, in accordance with Jackendoff's (1975) redundancy rules.
5. When an already learned verb is the head of an idiom, its syntactic properties become redundant in the phrasal lexical item (as a result of the activation of its superlemma and its individual lemmas), and spread over the whole of the phrase, facilitating its acquisition.
6. Since both native and non-native speakers are expected to have in their mental lexicon more high frequency verbs than low frequency verbs, they will be acquainted with more idiomatic expressions that contain high frequency verbs than with those including low frequency verbs.

Without disregarding the significant differences that exist in the mastery of formulaic language between native and non-native speakers of a language, the propositions above suggest that, after all, the mechanisms by which native speakers acquire idiomatic expressions are not that different to those set in motion for the acquisition of this type of formulaic expressions by non-native speakers. Hence, some of the reasons for the differences between both origin groups in the acquisition of idioms may reside on the individual's knowledge of the language, not only of the vocabulary but also of the grammar that allows a speaker to predict the existence of associated lexical items within an idiomatic syntactic construction. As Jackendoff (1975) puts it:

We have thus abandoned the standard view that the lexicon is memorized and only the syntax is creative. In its place we have a somewhat more flexible theory of linguistic creativity. Both creativity and memorization take place in both the syntactic and the lexical component. When the rules of either component are used creatively, no new lexical entries need be learned. When memorization of new lexical entries is taking place, the rules of either component can serve as an aid to learning. However, the normal mode for syntactic rules is creative, and the normal mode for lexical rules is passive (Jackendoff, 1975, p. 668).

Although it is clear that there are other important factors that need to be taken into consideration to explain the substantial differences in the acquisition and use of formulaic language by native and non-native speakers of a language, among which exposure seems to be the most relevant one, the frequency data on verbs that have been presented in this research suggest that the better known the verb is, the more likely the verb phrase idiom will be learned because the redundant grammatical and semantic properties of the verb spread over the whole of the clause, and the learner ‘gets a lot for nothing’. Therefore, it will be in the interest of learners to learn items with more redundancy, such as verbs.

In addition, an interesting question emerges from the findings of this research and the propositions discussed above: Are most idioms verb-headed since they are coined more readily, learned more quickly, and therefore there will be more of them? On these grounds, further research is suggested to test the prediction that there are more verb-headed idioms, and also that they are more frequent, than other types of idioms.

Finally, the findings of this research, which support those yielded by the studies of Kuiper et al. (2009) and Escaip (2008), have a significant impact on the holistic theory of idiomatic expressions that assumes that idioms are stored in the mental lexicon as long words and retrieved as wholes (Bobrow & Bell, 1973; Gibbs,

1980; Swinney & Cutler, 1979). Evidence shows that this is not the case since the frequency of one individual lexical constituent of verb phrase idiomatic expressions, in this case the head-verb, plays an important role in their learnability.

4.2.3. Phrasal vocabulary of native speakers is age graded in that much of it is acquired in late adolescence and adulthood.

The results of the present study supported, once more, the prediction that formulaicity in native speakers is age graded. Correlational analyses performed to test the effects of age on the knowledge of formulaic expression for native speakers of the three languages investigated showed that the number of correct answers in the respective cloze test increased significantly with age for native speakers of Spanish, French and English. However, a quadratic function of age added as an additional covariate by method of hierarchical regression revealed that the prediction regarding the decline in the ability to retrieve phrasal vocabulary by elderly people, e.g., over 65 years of age, was supported only for the English language, where a significant decrease in the total score was found at high ages for native speakers of this language, who also displayed a generally lower performance than that achieved by younger mature adult speakers for the expressions in the low frequency group. In contrast, this prediction was not supported for native speakers of Spanish and French.

These results may be explained by some issues, which are outlined next:

1. When having a closer look at the samples of the native speakers of the three languages that participated in this research, it could be appreciated that the

sizes of the populations representing the ‘elderly’ were disproportionate when comparing them against each other, a fact that unmistakably generated the discrepancies in the results mentioned above. Whereas for English there were three participants over 65 years of age out of 59, i.e., 5 % of the total sample, for Spanish there were three out of 113, i.e., 2.7 % of the total sample, and there was only one for French out of 80, i.e., 1.25 % of the total sample. The samples’ proportions remained unbalanced even after reducing the age range to account for participants over 60 years old: there were eight participants for English, i.e., 13.6 %, four for Spanish, i.e., 3.53 %, and seven for French, i.e., 8.75 %. In all cases, the English sample of older people was larger than the other two samples, causing the same type of statistical problem of power that was dealt with in Escaip’s (2008) former study.

2. The scores of three of the four Spanish participants over 60 years of age were remarkably high in contrast to those of younger native Spanish speakers in the study. Those three participants, who are personal acquaintances of the researcher⁵⁶, are highly educated and academically active people, and, in the researcher’s opinion, highly intelligent. Therefore, these individuals do not properly represent the elderly population of native speakers in a Spanish speaking community. Furthermore, their correct answers spanned along the four different frequency categories, and did not indicate a particular deficiency in the mastery of expressions containing low frequency head-verbs.
3. Finally, closely examining the answers to the different test items according to their frequency groups, it could be observed that, contrary to what was

⁵⁶ Although all surveys were anonymous and did not include the names of the participants, the age of these participants ‘gave them away’ and the researcher could easily identify them since they were personal acquaintances.

expected, older native French speakers generally achieved a larger number of correct answers to the expressions with head-verbs classified in the low frequency category in comparison to younger native speakers of this language. However, although the first thought was that this issue was caused by the two expressions containing low frequency verbs which were found to be out-of-use very old idiomatic expressions⁵⁷ and, thus, would most likely be only known to older participants, from the examination of the answers to the individual test items in the low frequency category, it could be observed that the correctness of the answers did not correspond to any one in particular, and it was rather dispersed across the different expressions in such category. Therefore, the superior performance of participants over 60 years of age in comparison to that of younger participants in the low frequency category was most probably due to the inclusion of inadequate test items in it.

From the issues presented above, it is clear that there were some serious limitations concerning the samples of elderly people used in this research, which hindered the expected outcomes for Spanish and French native speakers over 65 years of age. In addition, there were some structural problems of the French instrument with regard to the test items included in the low frequency group. However, despite these constraints, the results for the three languages regarding the age-graded nature of formulaic language in a younger adult population backed the results of the former studies by Kuiper et al. (2009) and Escaip (2008), and supported the predictions that the amount of phrasal vocabulary in the mental lexicon of a speaker increases with age.

⁵⁷ *Déballer ses salades* and *Barbouiller du papier*.

Supposing therefore that formulaicity in native speakers is age graded, how is this to be explained? It is not simply a product of an accumulative process that results from the time of exposure to formulaic language in everyday activities, throughout one's life. Although time is unquestionably an influential factor for the acquisition of formulaic expressions, there is another central reason for the prevalence of formulaic expressions in the discourse of adolescent and adult native speakers of a language: their social interactional needs.

The use of formulaic language not only increases the efficiency of the language processes, and provides the speakers with the necessary fluency by reducing the time of retrieval of language items from the mental lexicon; formulaicity also performs important language functions in social interaction, and presents the speakers with suitable frames for communicating (Corpas Pastor, 1996; Kuiper, 1996; Nattinger & DeCarrico, 1992; Sinclair, 1987; Wray, 2002).

During childhood, speakers live inside of a 'socio-interactional bubble' (Wray, 2002, p. 135), where their basic communicative needs of survival and comfort can be fulfilled by using just a few formulaic expressions. Consequently, children can afford the time to develop their analytic language ability, as their verbal exchanges are rather constant across the limited range of the situational contexts where they interact. However, mental and physical maturational processes take their course, and speakers face new communication challenges when encountering new situations and assuming new social roles. Thus, when these times come, adolescents and adults' language must be apt to execute the social interaction functions required to guarantee speakers' adequate integration into the social community where they belong. Formulaic language largely achieves this task. Therefore, the amount of phrasal vocabulary of native speakers increases with age, and it should be expected that this amount will be

positively correlated with the number and nature of social roles that an individual performs in a particular society.

4.3. The Research Questions

The three main hypotheses of this research have been discussed above, in line with the results obtained. As can be noted, these results support those of Kuiper et al.'s (2009) study for the English language, and those of Escaip's (2008) investigation for the Spanish language, and extend the findings to the French language. Therefore, the results of this study support the following predictions:

1. Non-native speakers acquire a significantly less extensive phrasal vocabulary than native speakers of Spanish, French and English.
2. The frequency of usage of the head-verbs in formulaic expressions in these three languages is tightly linked with the mastery of such utterances.
3. The size of the formulaic vocabulary acquired by native speakers, in either Spanish, French or English, is positively correlated with age.

Notwithstanding the limitations mentioned in the former discussion, the overall findings are considered to be reliable and, hopefully, may provide worthwhile outcomes if taken into account for further investigation in the field of the acquisition of formulaic language by non-native speakers of a language.

On the other hand, besides the three central hypotheses already discussed, some research questions were put forward in this work, with the aim of providing

further insight into the study of formulaic language, and into the processes involved in the acquisition of phrasal vocabulary. Without being at the core of this study, the answers to some of these questions may prove to be useful for further research on the subject matter of this study.

4.3.1. Are there any links between the mastery of formulaic expressions by non-native speakers of a language and duration of learning, age, and type of learning?

It has been proposed that adult non-native speakers rely more on the analytic language system and concentrate more on individual words than on sequences of words (Wray, 2002; Wray & Perkins, 2000). According to Wray (2002), adult second language learners take an essentially non-formulaic approach to language learning by mainly noticing and remembering individual words rather than meaningful chunks. Therefore, adult language learners' "building material is individual bricks, rather than prefabricated sections" (Kjellmer, 1990, p. 124, cited in Durrant & Schmitt, 2009). This results in a serious deficit on collocational knowledge in most cases of second language learners, and even for proficient speakers.

However, other researchers state that this shortage on formulaicity acquaintance is basically due to insufficient exposure to the target language, rather than to a 'word-based' approach to learning. For instance, Abel (2003) suggests that non-native speakers' shortage of formulaic language can be attributed to the low frequency to which they are exposed to formulaic expressions, which results in the development of a relatively small number of phrasal lexical items entries. Abel (2003) indicates that it is the lack of exposure what restricts non-native speakers' acquisition of formulaic language, a fact that leads them to rely on the individual constituents of

formulaic sequences and their respective conceptual representations for such sequences' interpretation and use.

Exposure has been amply recognized as an essential element in the acquisition of language (Adolphs & Durow, 2004). Ellis (2005) argues that the more exposure to the target language non-native speakers experience, the more and the faster they will learn. Indeed, research evidence has revealed that non-native speakers learn more formulaic expressions as they progress in a new speech community, and proficient non-native speakers do acquire and make use of formulaic sequences (Durrant & Schmitt, 2009, 2010; Wolter & Gyllstad, 2013).

Exposure to a language is affected by a number of factors such as time and type of learning, and sociocultural integration to the target language environment (Adolphs & Durow, 2004). Thus, in order to test the effects of these variables on the performance in the cloze test of the non-native speakers of the three languages examined in the present work, the links between time of learning and/or speaking the second language, and the type of learning the particular language, were investigated.

Firstly, to test the links between the number of years/months that the non-native speakers that participated in this research had been learning and/or speaking the target language and their mastery of formulaic expressions, correlational analyses were performed. The results revealed that there was a significant correlation between the total score in the cloze test and the time that non-native speakers of Spanish had been learning or speaking the language. These results are analogous to those obtained in the preceding investigation for the Spanish language by Escaip (2008), where, as expected, those participants who spent longer learning the language achieved higher levels of formulaic language mastery. On the other hand, although the correlations between time and the number of correct answers in the cloze test were not found to be

significant for the non-native speakers of French and English, they were, however, approaching significance. On these grounds, it seems reasonable to assume that time was indeed an influential variable in the performance of the non-native speakers of the three languages investigated in this research.

Furthermore, the effect of age on the non-native speakers' performance was also examined, but it was not found to be an influential factor on the mastery of formulaic expressions for the non-native speakers of Spanish, French or English. Similar results were found in Escaip's (2008) former research for the Spanish language. This is not surprising since the age-graded nature of formulaicity is expected to be present only in native speakers, in accordance with the proposed developmental model for the natives of a language that describes the interaction of creative language and formulaic language from infancy, emphasizing the relationship between the cumulative nature of formulaicity and age (Wray, 2002; Wray & Perkins, 2000).

It has also been proposed that it is not only the amount of input that is fundamental in formulaic language learning, but also the nature and context of such input (Hoey, 2005; Siyanova-Chanturia & Martinez, 2014). Research evidence reveals that non-native speakers' deficiencies in phrasal vocabulary are likely to be the result of insufficient and/or inadequate exposure to the target language (Durrant & Schmitt, 2009, 2010; Wolter & Gyllstad, 2013). On these grounds, an explicit focus on target formulaic lexical items will significantly improve their acquisition, and substantial exposure to the second language is needed to learn a large number of formulaic expressions (Durrant & Schmitt, 2010).

It has also been claimed that one of the main reasons of the difficulty of adult second language learners in acquiring formulaic language is the lack of awareness of

this phenomenon (Bishop, 2004). However, the results of some studies that attempted to enhance non-native speakers' awareness of a range of formulaic sequences through diverse methodologies, showed only minor improvements in non-natives' acquisition, recognition and production of phrasal vocabulary (Bishop, 2004; Jones & Haywood, 2004; Van Lancker-Sidtis, 2003). In any case, the awareness issue can be referred back to exposure, with some scholars affirming that the shortage of awareness is caused, in fact, by the quality of exposure (Durrant & Schmitt, 2010; Kuiper et al., 2009).⁵⁸ Therefore, lack and inadequacy of exposure appear to be some of the central reasons why non-native speakers do not acquire as many formulaic expressions as native speakers of a language do, rather than an 'innate' inability of second language learners to acquire phrasal vocabulary.

In the exploration of the quality of exposure, type of learning may provide an indication of the kind of input that language learners are presented with. In formal instruction, school-based language learners are often inclined to adopt an analytical approach to learning, given that the type of language instruction they receive is, most likely, based on single-word vocabulary and grammar, a traditional approach in many language schools (R. Ellis, 2005). On the other hand, informal instruction, e.g., learning by living in the target language community, although not being a systematic process, provides learners countless opportunities to interact with native speakers, with the ensuing frequent exposure to phrasal lexical items used by such speech community. Therefore, through the active contact with native speakers of the target

⁵⁸ It should be noted here that the issue of awareness of idioms differs from that of awareness of restricted collocations. Idioms' salience and idiosyncrasy allow them to become familiar to the members of a speech community after only a few exposures (Siyanova-Chanturia & Martinez, 2014). On the other hand, collocations are largely compositional and a great amount of exposure is required to allow them to be learned as lexical units since they can also be parsed in a perfectly normal way as compositional units. It is only after a large amount of exposure that one learns that 'this' is the preposition and no other used in a particular collocation (Kuiper, personal communication).

language community, the exposure of non-native speakers to the use of a range of formulaic expressions may facilitate their learning.

According to Ellis (2005), interaction in the second language is vital to building up language skills. As Irujo (1986) declares, “input without interaction is not sufficient for language acquisition” (Irujo, 1986, p. 237). In addition, living among native speakers of the target language should facilitate the cultural integration of second language learners, believed to be an essential factor in language learning, “on the assumption that social integration provides more exposure to a language” (Adolphs & Durow, 2004, p. 108). Dörnyei et al. (2004) claim that “the acquisition of a formulaic repertoire is a socially-loaded process that goes beyond mastering elements of the target language code as it also requires ‘tapping into’ the sociocultural reality of the L2 community and incorporating elements of it into the learners’ own language behavioural repertoire” (Dörnyei et al., 2004, p. 87).

On these lines, Kecskés (2000) affirms that adult non-native speakers tend to process the literal meanings of second language multiword expressions and have problems in becoming aware of them due to “insufficient conceptual fluency and metaphorical competence in the L2; use of an L1 governed conceptual base to process L2; and, the principle of salience is language-specific and changes from language to language” (Kecskés, 2000, p. 621). When second language learners do not have full access to the conventional conceptualization of the target language, they usually rely on the conceptual base of their native language. “They map target language forms on L1 conceptualizations, which often results not only in lexical but pragmatic failures as well” (Kecskés, 2000, p. 618).

The effects of sociocultural integration in language performance might be appreciated in the results of some research, if one assumes that the time of living in

the country of origin of the target language accounts for it. Van Lancker-Sidtis (2003) evaluated language background data (e.g., number of years of English study, number or type of other languages spoken, age of acquisition including either classroom instruction or informal learning in the United States, and number of years lived in the United States) for effects on performance in fluent non-native participants in a study of auditory recognition of English idioms. She found that the number of years lived in the United States was the only one parameter significantly associated with performance. Consistent with this, Brandt's (2008) findings revealed that the German university students who had lived abroad in an English-speaking country for three months or more scored significantly higher in the cloze test, doubling the number of correct answers for the formulaic expressions tested, compared with the students who had only studied English at university, or just had their secondary school English to rely on.

However, whereas some research has found a positive correlation between the level of social integration in the target language community and formulaic language acquisition (Adolphs & Durow, 2004; Dörnyei et al., 2004), other studies have not found any links between the amount of exposure to the target language speaking environment and the use of formulaic expressions (Siyanova & Schmitt, 2007).

Therefore, with the aim of exploring the links between type of learning and the mastery of formulaic expressions by the non-native speakers in this research, on the assumption that the learning mode might reflect the quality of exposure to the target language, one way ANOVA tests were performed. The results revealed that learning type, either formal (school-based), informal (by living in the second language community and, thus, facilitating the cultural integration of second language learners and the interaction with the native speech community), or a combination of both, did

not have significant effects on the knowledge of phrasal vocabulary for Spanish, French or English non-native speakers. From a visual examination of *Figures 17, 18 and 19*, it can be observed that, for all languages, the scores corresponding to both informal learning type and the combined mode (formal and informal) are situated at points above the scores achieved by the non-native participants that reported having learned the second language in a school. However, as mentioned before, it should also be appreciated that these differences are not significant.

A further planned comparisons analysis excluding the mixed category confirmed the results of the former analysis by not finding significant effects of the formal and informal type of learning in the performance in the cloze test of the non-native speakers that participated in this research. In addition, a separate slopes ANCOVA was conducted to test for differences in the effect of time learning on the total score across learning types. The overall trend was that more time learning resulted in higher scores, but there was a large amount of variability within the slopes. These results suggest that time had an effect on learning and, as expected, non-native speakers got better over time notwithstanding the type of learning, but this effect was not the same for each of the languages investigated, and for the different learning types.

All in all, the results of this research on the role that both time of learning and/or speaking a second language and language learning mode play in the mastery of formulaic expressions by non-native speakers are inconclusive. However, since the acquisition of formulaic language by a second language learner seems to be largely affected by the amount and the quality of exposure, further research could usefully build up on these results by controlling more rigorously for the variables used in this research to account for these factors.

Moreover, due to the fact that the quality of exposure constitutes a rather complex variable and, thus, it is hard to define and control (albeit not impossible) in experimental designs, it is clear that it is not only reflected in the learning modes non-native speakers undergo to acquire a second language, and therefore different parameters need to be included in future studies. On the other hand, if time of learning and/or speaking a language, or of living in the native speech community is to be considered one parameter that might provide an indication of the amount of exposure to the target language, more objective and precise estimates are required.

However, the findings of the present study have provided a very clear idea as to the definition and the effects on formulaic language acquisition of one important factor that represents not only amount, but also quality of exposure: lexical frequency, and more specifically, verbal frequency. Further research exploring the effects of verbal frequency on formulaic language learning should be regarded as essential in the search of a language model that facilitates the successful acquisition of phrasal lexical items by second language learners.

4.3.2. Is the frequency of a formulaic expression as a whole as found in corpora a good predictor of its acquisition?

Even though the pervasiveness of formulaic language in human discourse has been widely acknowledged, and oral and written speech of native speakers of a variety of languages have been found to swarm with formulaic sequences such as restricted collocations, phrasal verbs and lexical bundles, it has also been highlighted the peculiar nature of idioms which, albeit salient, do not tend to be frequent in speech (Conklin & Schmitt, 2012).

Many corpus-based studies have revealed the infrequent nature of idioms

(Moon, 1998, cited in Siyanova-Chanturia & Martinez, 2014). As mentioned in a previous section of this work, corpus-assisted search methodology has been widely used to inspect large amounts of text in a systematic manner, and to produce frequency counts not only of single words but also of word strings. Hence, a number of computer corpus-based studies have provided evidence for the low frequency of idioms in the corpora examined.

Since frequency of use in corpora can be used as a proxy measure for exposure for individuals, which has been observed to be an essential factor for the learnability of formulaic language, one may wonder why the members of a speech community easily become acquainted with a rather large number of idioms if these formulaic expressions are not that frequent in speech. In relation to this, it has been suggested that it is maybe because of their salience and idiosyncrasy that idioms, despite their low frequency, become conventional in a speech community, and “even a dozen of occurrences will be sufficient to render them familiar” (Siyanova-Chanturia & Martinez, 2014, p. 16).

Thus, it would appear that the more manifest it is that a sequence of words is idiosyncratic, the more likely it is that the speakers realize that they must learn it. In contrast, a collocation that is not idiomatic is not as clearly idiosyncratic. For instance, if we take a collocation like *fire a weapon*, there is nothing in the expression that indicates that the verb *fire* is the one that is conventionally used here. The phrase is perfectly understandable and not notably idiomatic. It is not until one has heard it often and becomes aware that no other verb is ever used for the action of ‘setting off a firearm’ that one realizes that this expression has a restriction on the particular verb that is used here. Therefore, the idiosyncrasy is not apparent until more instances have been met. This is, clearly, not the case of idioms whose idiosyncrasy is manifest in

many instances on the first parse (Kuiper, personal communication).

The notions above partly explain the results of the separate slopes ANCOVA analysis that was conducted in this study to test if the frequency of the formulaic expressions as wholes affected the knowledge of such expressions by both native and non-native speakers that participated in this research.⁵⁹ The results showed that there was not a consistent relationship between the frequency of the idiomatic expressions as wholes and their mastery by the participants in the study (See Table 8). A significant effect was found only for native French speakers and non-native Spanish speakers, but such an effect was relatively low. Moreover, the presence of two significant unrelated cases may have been a product of random chance. Therefore, contrary to the results found for the frequency of the head-verbs of the formulaic expressions tested, where the higher the frequency of the head-verb is the more likely is that the corresponding expression is known to the speaker, the frequency of the expressions as wholes did not predict their learnability.

However, as has been noted in the methodological issues section of this work, an important matter to consider when performing computer-assisted corpora exploration of formulaic language is the limited capability of computer searching tools to define the boundaries of recurrent strings of words, and to discriminate between the formulaic and the novel nature of identical lexical sequences. As some scholars point out, the length of idioms, which in some instances comprise eight or even more words, prevents a direct comparison of their frequency with that of individual words or shorter formulaic sequences (Siyanova-Chanturia, Conklin, & Schmitt, 2011; Siyanova-Chanturia & Martinez, 2014). In addition, the high

⁵⁹ As indicated in the Method chapter of this work, the frequency of each of the expressions used in the different cloze tests elaborated for the Spanish, French and English languages was investigated using Sketch Engine (<http://www.sketchengine.co.uk>), a web-based corpus query system that allows language researchers to investigate word's grammatical and collocational behavior in a number of languages (See **Appendices O, P & R** respectively).

variability of the idiomatic expressions, which may contain a number of slots that can be filled by a number of alternative lexical items, obscures their straightforward identification and count.

Another problem resides in the unavoidable subjectivity of the criteria used by the researchers to select the sequences of interest (Wray, 2002). Reading the immediate context may provide, in many cases, a good indication of the boundaries and the nature of the relevant sequences of words one is searching for. However, despite trying to exercise a careful examination of the corpora, the author of the present work may have as well incurred in some selection errors and, therefore, frequency count inaccuracies, due to the inaccessibility, in many instances, to the context required for the reliable identification of the idiomatic expressions in question and for their appropriate categorization into idiomatic or literal phrases.

All the factors above represent problems that need to be taken into account when conducting computer-assisted corpus research. However, it is possible that the main problem for the identification of formulaic sequences and the generation of reliable frequency counts through corpus-based analyses lies in the inherent characteristics of the corpora examined, rather than in the search techniques.

Corpora are taken to be a representative sample of production in a human language. Nonetheless, it should be kept in mind that language corpora do not represent the particular language itself in all its aspects and its nuances but only examples of its use, and one should always be aware of the distinction between linguistic competence and the outcome of linguistic performance. As Kuiper (personal communication) points out, there is a failure to separate the language from the use of that language which results in texts (oral or written). Thus, what one finds in corpora is not the language itself but examples of how it has been used. The language

contained in the corpora will never replicate a given speaker's language experiences since these experiences will be largely personalized depending on a number of factors such as education, background, dialectical issues, interests and personal activities (Wolter & Gyllstad, 2013).

In addition, the fact that most corpora are predominantly constituted of written texts, but the input for most speakers is spoken, renders corpora unrepresentative of the actual language a speaker is exposed to. The corpora used to explore the frequencies of the Spanish and French expressions as wholes, the TenTen corpora⁶⁰, are created only from the web by automatic tools. When investigating the nature of the texts comprised in these corpora, the researcher found out that although it is possible that there are some speech transcriptions, they would be nearly nothing compared to the corpus size comprised of written texts. The researcher also found that the TenTen corpora are supposed to contain a considerable number of Internet discussions, which can be seen as something between written and spoken text. Nevertheless, the majority are written texts. On the other hand, the frequencies of the English expressions as wholes were explored using the Sketch Engine text corpus analysis software on the British National Corpus (BNC)⁶¹, a 100 million word corpus comprised of samples of written and Spoken English from a wide range of sources. Although a more balanced corpus, it still presents the different problems outlined in the previous paragraphs.

Therefore, it is likely on these grounds, first, that they will exhibit a relatively low frequency of those idioms which are found in speech; second, there will be a low frequency of idioms in corpora in relation to the frequency of simple single words

⁶⁰ <http://www.sketchengine.co.uk/documentation/wiki/SkE/Biblio>
<http://www.sketchengine.co.uk/documentation/wiki/Corpora/TenTen>

⁶¹ <http://www.natcorp.ox.ac.uk/corpus/>

which are core vocabulary and will thus always be contained in a balanced corpus; and, third, the fact that corpora consist mainly of written texts will entail that it is unlikely that the frequency found for idioms in corpora will be a very reliable indicator of a speaker's exposure to a particular idiomatic expression. In other words, the frequencies are so small and the corpora so unrepresentative of what speakers meet in their input that it is hardly likely to obtain useful frequency data.

Thus, the frequency of the expression as a whole as found in corpora is not a good predictor of acquisition, but the frequency of its head-verb will be much higher and, therefore, possibly a more reliable indicator in terms of how often speakers are likely to have come across it and its associated phrasal lexical items. With regard to this, the links between the frequency of the head-verb and the frequency of the corresponding expression in the same corpus were also tested for all three languages by conducting correlational analyses using Spearman's rho coefficient. The results revealed a significant relationship for Spanish, but not for the French and English languages. Given the arguments above and the outcomes for French and English, the researcher is inclined to assume that the results for the Spanish language were product of frequency count issues and random chance, and, therefore, further research should be performed to either endorse or dismiss the correlation found between the head-verbs and their respective Spanish formulaic expressions (See **Appendices P, Q & R** for corpora frequency values).

In addition, for a validity check of the Spanish, French and English corpora that were used in this research, an analysis was performed to test the relationship among the frequency found in the corpora for the head-verbs investigated in the study, the frequency of such verbs as per research in several sources on word frequency in the Spanish, French and English, and the knowledge of the formulaic expressions

tested measured by the scores of the participants in the cloze test. All correlations were found to be significant (See Table 9), supporting the reliability of the frequency values assigned to the head-verbs examined in this study.

In sum, it is assumed that the frequency of an idiomatic expression as a whole as found in corpus extraction is not a good predictor of its learnability, and that the frequency of the head-verb is not correlated to the frequency of the idiomatic expression that contains it. Stubbs (2009) affirms that “many words are frequent because they are used in frequent phrases” (Stubbs, 2009, p. 119). While this assertion may be true for words that are contained in a number of multi-word units that are certainly frequent, such as restricted collocations, phrasal verbs and lexical bundles, it does not seem to apply to idioms for the reasons mentioned above.

4.3.3. Is the frequency of the noun(s) contained in a formulaic expression linked with the knowledge of such expression for native and non-native speakers of a language?

As Libben and Titone (2008) point out, the effects of word frequency on idioms have received little attention.⁶² They note that, from a compositional approach, the frequency of the single lexical elements contained in idiomatic expressions should play a role in idiom processing. Indeed, the results of the present work have revealed that the frequency of the head-verb of a phrasal lexical item is a good predictor of its learnability. Libben and Titone (2008) investigated the effects of word frequency in idiom comprehension by collecting normative data on a large set of idioms, all of them verbal phrases, and then by performing correlational analyses between a number

⁶² To their knowledge, there was only one study that had investigated (at the time) the effects of component word frequency on idiom comprehension, that conducted by Cronk et al. (1993).

of variables including decomposability, familiarity, meaningfulness, literality, predictability, verb frequency, and noun frequency. Libben and Titone's (2008) results showed a positive correlation between verb frequency and idiom familiarity, whereas they found a negative correlation between the frequency of the verb and idiom predictability.

Given the definitions provided for some of the variables in Libben and Titone's (2008) research,⁶³ it can be assumed that their results do not fully support this study's findings. In fact, their findings not only do not fully back the results of the present work on the effects of the frequency of the head-verbs on the acquisition of the idiomatic expressions that contain them, but also their results on the effects of noun word frequency are contradictory. In Libben and Titone's (2008) investigation noun frequency was found to be associated with all the variables mentioned above, with the exception of literality and verb frequency. In contrast, the separate slopes ANCOVA conducted in this research to test if the frequency of the noun contained in the formulaic expressions affected the knowledge of such expressions showed that there was not a consistent relationship between these two variables. A significant and positive trend was found only for non-native speakers of Spanish and French, but not for native speakers of the three languages, and non-native speakers of English.

There are a few issues that have to be addressed in relation to these apparently contradictory results. Firstly, the parameters for decomposability, familiarity, meaningfulness, predictability and literality in Libben and Titone's (2008) study were set in accordance with subjective ratings of the participants, and do not correspond to

⁶³ "Familiarity is operationally defined as the subjective frequency with which comprehenders encounter an idiom in its written or spoken form, regardless of their familiarity with the actual meaning of the phrase. Meaningfulness is taken to represent the comprehenders' confidence in their understanding of what the phrase actually means. As applied to idioms, predictability is defined as the probability of completing an incomplete phrase idiomatically (e.g., *He kicked the _____*)" (Libben & Titone, 2008, p. 1106).

any of the variables examined in the present work. Moreover, all the participants were English native speakers, unlike in this investigation where verb frequency effects on the acquisition of formulaic language were investigated for native and non-native speakers of three languages. Second, the cloze procedure used to test idiom predictability consisted of a fill-in-the-blank task measuring only final-word predictability, which was always a noun (e.g., *she stole the show, she hit the sack, it hit the spot, he cleared his name, she drove him nuts, etc.*), in contrast to this investigation where the participants had to cloze on the head-verbs of the formulaic expressions examined (e.g., *we enter the fray, I made tracks, they've spared no expense, etc.*). Third, verb and noun word frequencies were assessed in Libben and Titone's (2008) research using Yahoo page count values divided by 1,000,000, measure which, as they put it, was 'somewhat nonstandard' (Libben & Titone, 2008, p. 1105), and different to the frequency sources used in the current investigation. Therefore, it can be observed that the methodology, aims and results of both studies are not comparable, and, in any case, these results only highlight the role that word frequency plays in idiom processing, and the importance of conducting further research on the effects of word frequency in the acquisition, comprehension and use of formulaic language.

Getting back to the results obtained in this research on the positive relationship found for non-native speakers of Spanish and French between the frequency of the nouns and the knowledge of the expressions that contain them, it seems pertinent to add a couple of thoughts. A first thought was that this outcome could have resulted from the particular Spanish and French expressions selected for this research which, by random chance, might include higher frequency nouns than the English expressions tested. As per visual examination of the frequency values

obtained in the corpora for the nouns contained in the idiomatic expressions of the three languages investigated (See **Appendices P, Q and R** for Spanish, French and English respectively), this is not the case. Whereas more nouns with higher frequencies are contained in the Spanish expressions in relation to the two other languages, French expressions contain nouns with much lower frequency than the nouns in the English expressions. Therefore, an association between the frequency measures of the nouns contained in Spanish and French idiomatic expressions, and the knowledge of such expressions by non-native speakers of these two languages cannot be simply established on the bases of the frequency values of the nouns included in the expressions investigated, since they differ considerably.

A second thought was to consider the effects in cognition of grammatical gender of the Spanish and French languages, in contrast to the English language, which does not have a grammatical gender system. Spanish and French are ‘gender loaded’ languages: they have a grammatical gender system and mark gender with morphological information assigned to nouns, pronouns, determiners and adjectives. Conversely, English does not allocate gender to all nouns that denote animates (e.g., doctor) or to nouns that denote inanimates (e.g., apple), and does not have grammatical gender categories (Sera et al., 2002). The findings of this research revealing a positive and significant relationship between the frequency of the noun in a formulaic expression and its knowledge by non-native speakers of these two gender loaded languages pose some interesting questions: Does the grammatical gender of nouns play a semantic role in the acquisition of idioms for non-native speakers? Is grammatical gender of nouns an additional element in the learning process of a second language that increases the awareness of associated lexical items in a

particular syntactic construction, and facilitates its acquisition by non-native speakers?

Obviously, these results may be just a product of random chance since this relationship was not found for Spanish and French native speakers – if indeed grammatical gender does have an effect, it would seem sensible to expect to find it also for the native speakers of these two gender loaded Romance languages. Furthermore, other variables such as the native language of non-native speakers, which may or may not be gender loaded and, thus, affect correspondingly the speakers' knowledge of formulaic expressions in a second language, would need to be controlled more rigorously in order to obtain solid results that lead to sounder conclusions.⁶⁴ In addition, the influence of cross-linguistic similarities would need to be acknowledged and monitored.

Thus, it is clear that research questions are rarely fully answered and often constitute fertile grounds where more research questions develop in the search for insights into the puzzles of knowledge of the different scientific and academic disciplines. Therefore, the effects of frequency and grammatical gender of the nouns contained in formulaic expressions on the acquisition, comprehension and use of such expressions by native and non-native speakers of a language may represent for some scholars an appealing issue for future research. For instance, if one were to use the

⁶⁴ As mentioned in the Method chapter, the population of non-native speakers was constituted as follows:

a) The native languages of non-native speakers of Spanish were Creole/French (1), Dutch (3), English (33), French (8), German (6), Greek (1), Italian (2), Japanese (1), Portuguese (2), and Slovak (1). One participant did not specify native language.

b) The native languages of the non-native speakers of French were Dutch (1), English (19), German (1), Mandarin (1), Portuguese (1), Russian (2), and Spanish (18).

c) The native languages of the non-native speakers of English were Arabic (1), Cantonese (1), Danish (1), Dutch (2), French (1), German (2), Japanese (1), Kiribati (1), Mandarin (3), Portuguese (1), Russian (7), Spanish (29), and Telugu (1).

same cloze procedure but this time controlling for the frequency of the noun head of the complement in the same way as the frequency of the head verb of the verbal phrase was controlled for in the procedure reported in this study, that might yield more satisfactory results. Also, it is not known what the interplay between the cloze verb and the head noun of its complement might be. There is a degree of predictability possible between these two heads of phrase which might be investigated by looking at the degree of cohesion between them. But if the verb is missing, as it was in the procedure used in this research, then that might have an effect on the degree to which the noun in the complement predicts the learnability of the whole expression.

4.3.4. Are the research instruments used in the current study suitable to test speakers' knowledge of formulaic expressions?

It has been argued that understanding a text it is not the same thing as filling the blanks, since the former task only involves receptive skills whereas the latter requires additional productive skills (Dörnyei & Csizér, 2002). Cloze testing requires a person to read a certain text, and then to produce a word, i.e., access it through lexical retrieval in a productive task. Therefore, cloze testing is receptive up until it comes to filling the gap when it becomes productive.

Cloze methodology is a common and widely used language-testing tool that is easy to construct and run and that, according to some authors, entails a high degree of reliability (Katona & Dörnyei, 1993). The cloze procedure is commonly used to assess language ability such as reading comprehension skills, vocabulary, and second language proficiency (Abraham & Chapelle, 1992; Alderson, 1979a; Dörnyei & Katona, 1992; Kobayashi, 2002; Schmitt, Dörnyei, et al., 2004).

As regards the suitability of cloze testing as a methodology that makes it possible to investigate whether or not a speaker knows a particular phrasal vocabulary item, it is assumed that the context provided and some of the constituents of the expression can trigger this expression in his/her mental lexicon, allowing the respondent to produce the missing word if he or she is familiar with that formulaic utterance. This assumption is supported by the superlemma theory which is a model of lexical access during the production of phrasal lexical items (Kuiper et al., 2009). Therefore, when the subject fails to produce the conventional word that has been deleted from the sentence and replaced by the gap, and simply guesses an alternative filler – which would not necessarily be incorrect or illogical from a syntactic/semantic point of view, then it is believed that this particular formulaic expression has not been acquired and stored in his/her mental lexicon.

On these grounds, and given the satisfactory results obtained in previous investigations using cloze methodology to test the mastery of formulaic language by native and non-native speakers of a language (Escaip, 2008; Kuiper et al., 2009), cloze procedure was used again to test the knowledge of formulaic expressions by the native and non-native speakers of Spanish, French and English that participated in this research. Once more, as noted throughout the discussion of the research hypotheses and of the different research questions preceding this section, the application of the cloze instruments developed for each of the languages mentioned above yielded significant results. Moreover, these results are consistent with those generated by the previous studies that constitute the foundations of this work (Escaip, 2008; Kuiper et al., 2009).

Therefore, in order to obtain further empirical support for the utility of the cloze instruments used in this study, they were tested for reliability using the

Cronbach's alpha test, which is one of the most commonly reported estimates for reliability in language testing (J. D. Brown, 2002a). The overall value of alpha was high for all three instruments: Spanish ($\alpha = .878$), French ($\alpha = .894$), and English ($\alpha = .896$) (See Tables 10, 11 & 12).⁶⁵ Generally, the within levels' values of alpha for the different categories of items of all three tests, and all items individually, were also satisfactory. Nevertheless, a few items produced independently rather low alpha values: two high-light frequency items (containing the verbs *tener* and *perder*) and one medium frequency item (containing the verb *besar*) of the Spanish instrument; one medium frequency item (containing the verb *pleuvoir*) and two low frequency items (containing the verbs *déballer* and *barbouiller*) of the French instrument; and, one medium frequency item (containing the verb *wipe*) of the English instrument . Removing these items does not contribute much to an increase in the alpha value of the categories containing these items, which suggests that, regardless these alpha values, the research instruments are mostly internally consistent (See Tables 13, 14 & 15 for the Spanish, French and English instruments' within levels reliability results, respectively).

However, how the instruments used in this research relate as sample measure of the total phrasal vocabulary of speakers, i.e., of the validity of the test instrument, has not been checked for, a task that, indeed, would be difficult given the possibly very large phrasal vocabulary stored in the mental lexicon of mature speakers. In addition, the usefulness of Cronbach's alpha as a reliability estimate and as a measure of internal consistency is contested (Sijtsma, 2009). It has also been claimed that alpha does not indicate the stability or consistency of the test over time, or across test

⁶⁵ "Cronbach's alpha is used to estimate the proportion of variance that is systematic or consistent in a set of test scores. It can range from 00.0 (if no variance is consistent) to 1.00 if all variance is consistent) with all values between 00.0 and 1.00 also being possible. For example, if the Cronbach's alpha for a set of scores turns out to be .90, you can interpret that as meaning that the test is 90% reliable, and by extension that it is 10% unreliable (100% - 90% = 10%) (J. D. Brown, 2002a, p. 17).

forms, and, thus, caution should be taken when extrapolating reliability results from a particular set of circumstances to other situations (J. D. Brown, 2002a). So, although the cloze methodology used in this investigation is considered to have yielded highly satisfactory results, further and more scrupulous exploration of its attributes as an effective language-testing tool is warranted.

4.4. Practical Implications

4.4.1. Teaching formulaic language

Language acquisition is frequently referred to as the learning of rules (Wray & Bloomer, 2006). Grammar rules and grammatical analysis of sentences often constitute in second language classroom-based education the fundamental aspects of teaching. Moreover, second language teaching tends to focus on vocabulary learning activities for the acquisition of single words. Therefore, in traditional language approaches, language students usually start by learning individual words, and then put them together using the grammar rules in sequences that, in most cases, are far from sounding nativelike.

As Morgan Lewis (2000) puts it: “So much of the language teaching over the years has been based on the dichotomy of grammar and vocabulary: master the grammar system, learn lots of words and then you will be able to talk about whatever you want [...] No wonder students make so many grammar mistakes! They are using grammar to do what it was never meant to do. Grammar enables us to construct language when we are unable to find what we want ready-made in our mental lexicons. But so much of the language of the effective language user is already in

prefabricated chunks, stored in their mental lexicons just waiting to be recalled for use” (Morgan Lewis, 2000, p. 15).

It has been in the last few decades that important findings of the increasing linguistic and psycholinguistic research on the phenomenon of formulaicity have raised awareness of the importance of teaching formulaic sequences to second language learners. Language scholars claim that nativelike fluency in a language greatly depends on the knowledge and correct use of formulaic expressions, i.e., lexical phrases. In order to sound like a native speaker, L2 speakers need to learn and appropriately use phrasal vocabulary. Moreover, the appropriate use of formulaic expressions may not only make non-native speakers ‘sound’ like native speakers; the functional characteristics of the formulaic sequences selected under suitable cultural frames will also ensure that the speakers will be understood. So, formulaicity in language promotes the adequate integration of non-native speakers into the particular community where they interact.

Thus, from the traditional view where grammar was thought as “the bones of the language and vocabulary as the flesh to be added” (Hill, 2000, p. 47), in the new lexical approach phrasal vocabulary acquisition has been moved to the forefront of language teaching by many language teachers. The lexical approach (Lewis, 1993, 1997) gives phrasal vocabulary acquisition a central role in language teaching. The basic notion on which this approach relies is the idea that an important part of learning a language consists on the learner’s ability to understand and produce lexical phrases as chunks. In the lexical approach, language teaching focuses on ‘prefabricated chunks of lexis’, that is, fixed expressions that occur frequently in dialogues and constitute a larger part of both written and spoken discourse than

unique or creative phrases and sentences, which are made up by individual words put together with the rules of grammar.

Based on the importance of acquiring formulaicity by second language learners, some pedagogical approaches have been developed. Nattinger and DeCarrico (1992) stress the socio-interactional functions of formulaic sequences, and suggest that even though lexical phrases are preconstructed chunks of language reached by the speaker from the mental lexicon, they can mostly be analyzed using the rules of grammar. They argue that language learners can generalize and learn broader grammatical and morphological aspects of their second language by ‘chunking’ and analyzing the formulaic sequences with which they are presented as primary input in their learning process. In a similar line, Lewis (1993) claims that “language consists of grammaticalised lexis, not lexicalised grammar” (Lewis, 1993, p. vi), and also believes in the acquisition of grammar rules through the generalization from the formulaic expressions learned. Willis (1990) emphasizes the existence of recurrent patterns of words in language, and the importance of learning and analyzing such patterns by second language students in order to extend their language abilities.

A significant critique to the approaches outlined above is that of Wray’s (2000a), who finds it highly contradictory that “in order to encourage the development of nativelike idiomaticity, a fundamentally analytic approach is promoted, even though the very nature of formulaic sequences seems to be that they are not normally analyzed” (Wray, 2000a, p. 484). Other teaching approaches attempt to find a balance between the analytical and holistic features of the language. Ellis (2005), for example, argues that proficiency in a second language is acquired by the combination of the knowledge of grammatical rules with a vast repertoire of formulaic expressions.

In any case, if formulaic language is so important in language use, then it should be included in language syllabuses. It should also constitute a relevant subject in language teaching textbooks and materials, and have a significant place in tests of language achievement and proficiency. Yet, this is not the case. This may be due to the complexity that the process of selecting the most useful formulaic expressions to teach and learn represents. There are some important issues that make it difficult to determine which phrasal expressions should be incorporated in a language syllabus:

a) Phrasal expressions expand over a very wide and overlapping range of word groups, making it difficult to assign the different multiword units to particular categories and decide which ones to focus on (Shin & Nation, 2008).

b) Formulaic sequences are often problematic to identify. Whereas some of them are obvious, such as the idiom *raining cats and dogs*, others such as *take place*, meaning ‘happen’, are not (Martinez & Schmitt, 2012).

c) Formulaic expressions range from two word combinations such as *problem child* to lengthy ones such as *to recover from a major operation*. Thus, there are many more formulaic expressions than words and, therefore, achieving proficiency and learning vocabulary in a second language gets even harder when we think in terms of the acquisition of multi-word expressions instead of just learning individual words.

Regarding these issues, Hill (2000) writes: “Rather than spending all our time describing and sorting expressions, the real issue for the methodologist is try to help teachers to make simple categories which will help their students see some order and organization in the lexicon” (Hill, 2000, p. 51).

However, the problem does not only lie in determining which ones are the most useful formulaic sequences to teach, but also in raising the learners' awareness of such sequences. Noticing is a key aspect of the acquisition of collocations. It has been suggested that teachers must encourage learners to develop an appreciation for the different collocations they come across during their language training, and to expand this knowledge to subsequent collocations they meet (Michael Lewis, 2000). Boers et al. (2006) carried out a 'small-scale experiment' to test whether an instructional method that emphasized 'noticing' of formulaic sequences helped language learners to increase their phrasal vocabulary. The results revealed that experimental second language learners' awareness of formulaic expressions "was raised sufficiently for them to recognize usable chunks in a new text and to subsequently 'recycle' these in a conversation. In other words, these students turned their awareness into a strategic advantage" (Boers et al., 2006, p. 256).

In addition, another relevant element in the acquisition of phrasal vocabulary is exposure. However, one should be aware that 'input' does not equal 'intake', and meaningful exposure should foster "the learner's natural tendency to make sense of language and to learn for himself" (Willis, 1990, p. iv). Furthermore, it has also been found that review and repetition improves recall. Thus, language teachers should create materials and activities in which the target formulaic expressions are encountered several times within a relatively short period of time. Therefore, for pedagogical reasons, second language teachers need to establish how many subsequent exposures to the target formulaic expressions are required, and the length of time between them, to prevent the vanishing of the initial collocational memory traces, formed through adequate exposure (Durrant & Schmitt, 2010).

The literature, thus, shows that the difficulty that non-native speakers have in learning and using formulaic expressions has not been ignored, but as long as the mechanisms by which speakers acquire formulaic sequences are not elucidated completely, it will not be easy to develop an appropriate methodology for teaching phrasal vocabulary. The present study's findings, in agreement with those of Kuiper et al. (2009) and Escaip (2008), suggest that the frequency of usage of the head-verbs contained in formulaic expressions is linked to the mastery of such expressions. If this were the case, this fact could provide valuable insights not only into the mechanisms of acquisition of phrasal vocabulary by native and non-native speakers of a language, but also into the selection of the most appropriate phrasal lexical items to teach in second language courses, or at least those most likely to be acquired. This without disregarding the notion of variation of formulaic sequences which, besides posing some problems to the theory of holistic storage (i.e., different kinds of multi-word expressions seem to be stored in completely different ways), has also important pedagogical implications that suggest the need to change the approaches in the teaching and learning of the different kinds of formulaic expressions, based on their degree of fixedness/variability, and subsequent storage.

4.4.2. The importance of lexical frequency in language teaching

Word frequency has a recent tradition of being used as a useful criterion in teaching English vocabulary, as corpus research has revealed significant information about the coverage of the different words in written and spoken corpora. It has been asserted that “the most frequent 700 words of English constitute 70% of English text; the most frequent 1,500 words constitute 76% of text; the most frequent 2,500 words constitute 80% of text. That is, the 700 most frequent words cover 70% of text, but

the next 800 words cover a further 6% of text and the next 1,000 words cover 4%” (Willis, 1990, pp. 46-47). In other words, on average, seven out of every ten words we hear, read, speak or write come from the 700 most frequent words of English.

Other relevant frequency estimates correspond to those of Laufer and Nation (1999) who suggest that “the word *the* accounts for 7% of the running words in written texts. The most frequent 10 words account for around 25% of the running words in spoken and written use. The most frequent 1000 words account for around 75% of the running words in formal written texts and around 84% of informal spoken use. By contrast, the tenth 1000 most frequent words account for much less than 1% of the running words in a text”⁶⁶ (Laufer & Nation, 1999, p. 35).

This information has led to the proposition that, in general, low frequency words are not as useful to teach as high frequency words, given that the ‘return for learning’ the high frequency words, which is the coverage of spoken or written texts that the knowledge of these words provides, is very large (I. S. P. Nation, 1993). Thus, under this proposal, the answer to the question ‘How much vocabulary does a second language learner need?’ rests on the appropriate selection of a set of words that, according to their high frequency of usage, will provide a wide range of coverage of the language that non-native speakers must know in order to successfully understand and communicate in their second language. Therefore, vocabulary teaching should concentrate on teaching high frequency words, also taking into consideration their semantic and syntactic usefulness, e.g., words that “have many meanings, can define

⁶⁶ However, it should be noted that this does not mean that less frequent words are not significant in both the production and perception of texts in which those words occur.

other words, form opposites, have many collocates” (I. S. P. Nation, 2001a, p. 178), etc.⁶⁷

The majority of the research on the importance of frequency on vocabulary teaching has been done for single-word lexical items. However, it has been suggested that the frequency of occurrence of formulaic expressions,⁶⁸ and of the meanings and functions to which they are attached, also constitutes very useful criteria for the selection of the phrasal vocabulary which is most helpful to teach and learn (Kuiper et al., 2009).

Given the important role that frequency has been observed to play in language acquisition, some language researchers, aiming to foster the systematic incorporation of phrasal vocabulary into English language pedagogy, have compiled lists of phrasal expressions based on, among other criteria, their frequency of occurrence. Hill and Lewis (1999) published the LTP Dictionary of Selected Collocations with the aim of showing English learners how to use the most frequent and important collocations successfully.

Shin and Nation’s (2008) corpus study aimed to identify the most useful collocations in spoken English based on frequency and grammatical well-formedness among other criteria. The data were sourced from the ten million word spoken section of the British National Corpus (BNC), and the 1,000 most frequent spoken words were each investigated as a pivot word, i.e., the focal word in a collocation. Shin and Nation (2008) brought forth a list of 100 collocations, which were determined and arranged by frequency rank, on the assumption that the most frequent collocations are the most useful because speakers will have more chances of meeting and using them.

⁶⁷ For an analysis of the likelihood that frequency of a word and its collocates are positively correlated see Kuiper, *Formulaic genres* (to appear).

⁶⁸ Other than idioms which, as claimed by some scholars (Siyanova-Chanturia & Martinez, 2014) and as observed in this work, generally exhibit relatively low frequencies.

Simpson-Vlach and Ellis (2010) compiled a list of more than 600 formulaic expressions used in academic written and spoken English, the Academic Formulas List (AFL). They classified them into three groups according to a factor they called FTW (formula teaching worth), which was the result of an analysis involving qualitative judgment data and quantitative statistics tests.

In order to compile a list of useful expressions that learners may find difficult to interpret, Martinez and Schmitt (2012) used a mixed-methods, two-step methodology which involved a computer-assisted search for co-occurring words in the British National Corpus (BNC), and a subsequent manual selection based on high frequency, meaningfulness and relative noncompositionality criteria. Martinez and Schmitt (2012) presented the Phrasal Expressions List (PHRASE List) with the 505 most frequent non-transparent multi-word expressions in English.

The lexical approach to second language learning demands that teachers (and learners) focus on the associations between words, and the problem of deciding what phrasal lexical units should be included in language curricula would be simplified through the initial identification of their key elements. Thus, if formulaic sequences containing high frequency verbs are better known to both native and non-native speakers of a language than sequences including low frequency verbs, the selection should focus on the former as they seem easier to acquire and store in the mental lexicon.

However, it is important to remember that the results of the present study did not produce a linear correlation between the frequency rankings of the verbs explored and the knowledge of the formulaic expressions that included them. The findings revealed a broader band of frequency where the three highest categories, High Light,

High and Medium, achieved the top results. This points to the fact that, for the creation of a frequency list and the determination of the cut-off points, it is fundamental to take into account a number of other characteristics such as representativeness, range of usage across language texts and collocational properties, among others, of the verbs in question (Waring & Nation, 1997).

Thus, the exploration of formulaic sequences through corpus research may be useful if approached from various perspectives: the incidence of a particular expression in relation to the frequency of its head-verb (which, nevertheless, does not seem to have a positive correlation for idiomatic expressions in particular), the frequency of different formulaic sequences where a particular verb occurs, the occurrence of formulaic expressions containing high frequency verbs as compared to that of sequences including low frequency verbs, etc. Therefore, even though one must be cautious when exploring formulaic language through computer-based corpus analysis methodology, as stated in previous sections of this work, the availability of sophisticated computer programs and large corpora in the Spanish, French and English languages makes possible the investigation of numerous alternatives in the search of an appropriate body of phrasal lexical items to be included in the syllabus of a language course.

4.5. Strengths and Limitations

The greatest strength of this study is that it is the first one (to our knowledge) that has investigated the connection between the frequency of usage of the head-verbs of formulaic sequences in French and the mastery of such sequences, providing at the

same time further support to the findings of Kuiper et al. (2009), who originally explored this type of relationship for English phrasal lexical items, and those of Escaip (2008) who replicated the English study, but for the Spanish language. Thus, this investigation extends the current knowledge of the role of frequency on the acquisition of phrasal vocabulary in English and Spanish to the French language, and offers some new alternatives for the study of formulaicity across languages.

Another strength is considered to be the design and use of the cloze instruments which proved to be a suitable methodology for this study, and were very effective to test the acquaintance with a selection of formulaic expressions of native and non-native speakers of three different languages, by gathering in every case all the answers (correct or incorrect) required from the respondents. The vernacular character and light and easy-reading nature of the cloze tests used in this research encouraged the participants to go through the whole story and provided the context required for all the gaps to be filled in with a word. The consistency of the results obtained through the application of the different instruments for the Spanish, French and English languages supports the assumption that a cloze test that measures learnability of formulaic expressions by means of controlling for the frequency of one of their individual lexical items is reliable and can be re-invented cross-linguistically. The reliability estimates calculated using the Cronbach's alpha reliability test were high for the three different instruments, supporting their general effectiveness for the task.

In addition, a reasonably full slate of relevant statistical tools was used to analyze the empirical data, allowing the generation of significant and valid results.

However, albeit generally effective, the research instruments for Spanish and French presented some problems that should be addressed and taken into account for

the creation of analogous instruments for future research. The first issue corresponds to some problems found with two of the formulaic sequences used in the Spanish instrument containing high light frequency verbs: the expressions *Tener ángel* and *Volver la vista atrás* contain very high frequency head-verbs that, due to their high frequency, might be considered as delexicalized verbs (Sinclair, 1991), and thus proved hard to guess by the participants who used a variety of other verbs to fill in the corresponding gaps.

The same issues were also found for these expressions in the original investigation for the Spanish language. However, due to some personal circumstances that prompted the researcher to travel to Mexico, her native country, and stay there for some time, the possibility of administering the survey *in situ* was so advantageous that the research instrument remained unaltered in order to make use of the available time, and apply the survey to the largest possible number of Spanish speakers. From the results obtained in this research, there is no doubt of the necessity of replacing these expressions by other ones that contain high frequency verbs which, though highly frequent, are content verbs rather than delexicalized ones. Nonetheless, despite the issues above, the application of the unaltered instrument did not hinder the outcomes of the present research, and the results generally supported the predictions formulated.

In addition, subsequent feedback and a *post hoc* examination of the results yielded by the French instrument revealed that two formulaic sequences with low frequency verbs posed some problems as well: the expressions *Déballer ses salades* and *Barbouiller du papier* are very old expressions, practically out of use and, consequently, hardly used and known by native speakers in the target French language community. This resulted in the extremely low scores in the corresponding

frequency category, which also lowered the average of the overall performance of the French native speakers who completed the test. Therefore, these expressions should be replaced by expressions that contain low frequency verbs but whose use can be verified before the application of the test. This indeed represents a significant flaw that could have been prevented by piloting the instrument before its administration. Nevertheless, this was not considered necessary since two experts of the French language previously inspected and approved the idiomatic expressions that were used in the instrument for this language. Nevertheless, this important omission did not appear to hinder the final results since the outcomes were those expected by the researcher, and also the reliability estimate of the French instrument was fairly high.

On the other hand, although the use of a survey methodology allowed for a very respectable number of participants, there were some issues of lack of control, such as the balance of the different samples of respondents regarding age, location and educational level, which in a few instances hindered or obscured the expected outcomes. For instance: a) The decline in the retrieval of formulaic sequences by elderly native speakers of Spanish and French was not observed because they were not properly represented in the corresponding samples; and, b) The lower scores obtained by the Spanish native speakers in comparison to those obtained by native speakers of French and English were due to the fact that a large part of the Spanish native sample was comprised of young adults, who were also geographically based in a region of Mexico characterized by some local particularities in the language use of its inhabitants, rendering their speech somewhat different to that used in the rest of the country.

Another limitation of this research was the impossibility of applying a large number of the surveys *in situ*, and in the presence of the researcher or designated

administrators, a fact which prevented the control of some significant factors, such as the time that respondents took to complete the survey, and the chance that participants sought help from outside sources. Controlling for a fully balanced set of respondents and administering the experimental instruments on a personal basis in all instances might be difficult but not impossible with more resources, and a future researcher should endeavor to accomplish these tasks in further research.

Finally, it should be noted that this research did not control for some variables such as ambiguity, decomposability, familiarity, meaningfulness, literality, predictability, etc. This is a limitation on the results that have been obtained.

CONCLUSION

Notwithstanding the above limitations, the findings of this study provide strong support for previous hypotheses on the acquisition of formulaic language which propose that this process is age graded, and that non-native speakers have a lower rate of acquisition than native speakers of a language. Furthermore, a significant result of this investigation is that the frequency of usage of the head-verbs contained in Spanish, English and French phrasal lexical items is positively correlated with the acquisition of such expressions, given that sequences including high frequency verbs were easier to recall than expressions with low frequency verbs by the native and non-native speakers of the three languages investigated in this research.

These results are parallel to those obtained by Kuiper et al. (2009) and Escarp (2008) for the English and Spanish languages respectively, a fact that suggests the existence of cross-cultural implications of the phenomenon of formulaicity, and supports the assumption that the processes of acquisition of formulaic language across diverse linguistic systems function in a very similar way (Corpas Pastor, 2003). Thus, further research on the identification and comprehension of the analogous patterns of formulaicity among languages may unveil important information regarding the processes of acquisition of formulaic expressions by both native and non-native speakers of a language.

The findings of this investigation on the important role that the single lexical items that are contained in formulaic sequences play for the acquisition of such sequences by the speakers of a language, i.e., that the head-verbs of idiomatic phrasal lexical items constitute a significant predictor for their learnability, question the holistic theory of formulaicity that regards formulaic sequences as noncompositional

multi-word lexical items (Bobrow & Bell, 1973; Gibbs, 1980; Swinney & Cutler, 1979), suggesting that this is not the case. These findings support hybrid forms of storage and retrieval by assuming that idioms can be unitary by having their own lexical entry, and compositional at the same time because their components are simple lemmas stored in the mental lexicon. In other words, the holistic nature of idioms is not in conflict with their production and perception by means of single words that retain their own conceptual meaning.

With regard to the observed preferential verb frequency effects in verb phrase idioms, it has been theorized that a plausible explanation may lie in the syntactic redundancies provided by the verb to the associated words within a syntactic construction, if one extends Jackendoff's (1975) notion of lexical redundancy (Kuiper, personal communication). In addition, an interesting hypothesis that emerges from the findings on this relationship, and which merits further investigation, is that there might be more verb-headed idioms, and also that they are more frequent, than other types of idioms. Finally, the present study raises other relevant issues for further research, such as the relationship between the frequency of the nouns that are part of the complement of phrasal formulaic sequences and their mastery by native and non-native speakers of a language.

The investigation of the connection between the frequency of usage of the head-verbs or other lexical components of formulaic expressions and the mastery of such expressions constitutes a fairly new and promising field of study for the understanding of the processes involved in the acquisition, storage and use of formulaic language. Further studies will test if this type of frequency data can assist in the identification and selection of the formulaic expressions that are best to be taught, and easy to be learned, and in the development of the most appropriate methodologies

for teaching phrasal vocabulary. In addition, research in this area will undoubtedly contribute to the elaboration of comprehensive and useful dictionaries for second language learners.

The acquisition of phrasal vocabulary is an essential part of the language learning process. It is important for language teachers to understand the nature of formulaicity and the linguistic and developmental processes that underlie its usage. Therefore, by having explored and identified some of the important features of formulaic expressions, the outcomes of this study will contribute collaterally to this endeavor, helping in the development of an appropriate pedagogy for teaching phrasal vocabulary in Spanish, English and French.

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APPENDICES

- Appendix A:** Spanish Survey
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Appendix A
SPANISH SURVEY

Muchas gracias por participar en esta investigación llevada a cabo por Victoria Castellanos de Escaip, estudiante del Doctorado de la Facultad de Psicología de la Universidad de Canterbury en Christchurch, Nueva Zelanda. Su participación es anónima, por lo que usted no necesita escribir su nombre. Asimismo, su participación es estrictamente voluntaria. Una vez que haya completado y entregado el cuestionario no habrá posibilidad de retirarlo de la base de datos pues, al ser anónimo, no sabremos cuál es SU cuestionario.

Este no es un examen así es que no hay respuestas correctas o incorrectas. Los resultados de esta encuesta serán utilizados solamente para propósitos de investigación por lo que se le pide responder honestamente. La información que usted nos proporcione será vital para el éxito de este proyecto.

La realización de esta investigación tomará aproximadamente tres años. Si usted desea recibir una copia de los resultados, por favor envíe un correo electrónico a: ves17@uclive.ac.nz Usted puede conservar esta hoja de información para tal efecto.

Muchas gracias nuevamente por su colaboración y no dude en contactarme en caso de tener alguna duda.

**Este proyecto de investigación ha sido revisado y aprobado por el Comité de Ética de la Universidad de Canterbury (University of Canterbury Human Ethics Committee).*

POR FAVOR NO ESCRIBA SU NOMBRE

Edad: **Hombre** (☐) **Mujer** (☐)

¿Cuál es su lengua materna? **Español** (☐) **Inglés** (☐)

Otra (☐) **¿Cuál?**

Si su lengua materna NO es el español, por favor conteste las siguientes preguntas:

1. ¿Cuánto tiempo lleva hablando español? **años** **meses**

2. ¿Cómo aprendió a hablar español?

Por mi cuenta (☐) **En una escuela** (☐) **Otro** (☐)

Especifique por favor:

3. ¿En qué país?

En un país de habla hispana (☐) **¿Cuál?**

En otro (☐) **¿Cuál?**

Por favor lea la siguiente historia y escriba en los espacios la palabra adecuada en su opinión. Por ejemplo:

“Nunca volví a saber nada de María, le perdí la pista hace muchos años.”

No se preocupe si no tiene seguridad de que sea la palabra adecuada, simplemente escriba lo primero que le venga a la mente.

La Posada

Contra todos sus deseos, Vanesa pidió un taxi para ir a la posada de la compañía. Realmente no tenía ganas de ir, pero sabía que debía hacerlo pues a pesar de tener ya algunos meses trabajando allí, no conocía a mucha gente y ésta era una buena oportunidad para presentarse y relacionarse con el personal de otras áreas. La noche anterior lo había **con la almohada** y había decidido que iría. No le harían mal un par de tequilas y algo de música después de todo.

Esta época navideña le producía nostalgia pues, al **la vista atrás**, contemplaba a una niña ilusionada y juguetona que no veía la hora de abrir los regalos de Navidad. Pero el tiempo pasa, uno crece y la sociedad te indica que tienes que **cabeza**. La magia de la niñez se evapora. Así es que ahora Vanesa se entristecía de no poder sentir ese espíritu navideño al que mucha gente se **en cuerpo y alma**.

El taxi llegó. Vanesa se subió envuelta en una nube de Opium que impregnó el coche y los orificios nasales del taxista. “ Buenas noches, señor. Constituyentes 254, por favor.” “Buenas noches señorita. Con gusto.”

Sin embargo, tenía que ser honesta con ella misma... no sólo era su condición de mujer adulta de casi 30 años la que la prevenía de ilusionarse en esta época... Precisamente en diciembre del año anterior, Rodrigo, su novio de la preparatoria, de la universidad y de toda la vida, había decidido **el ala** y volar lejos con su mejor amiga. Fue un golpe terrible para Vanesa. Tuvo una depresión profunda, no se levantó de la cama ni probó bocado durante días y lloró por semanas hasta que su madre habló con el tío Pablo, el millonario de la familia dueño de una gran empresa y le suplicó que le ofreciera un trabajo a Vanesa en su sucursal de Querétaro. Eso la sacaría de la ciudad de México y la mantendría alejada de los lugares que le traían recuerdos tan tristes.

De algo le había servido a Vanesa **las pestañas** tantos años estudiando Derecho. Había sido la mejor estudiante de su generación y el tío Pablo la había hecho Subdirectora Jurídica de Equipos Electrónicos Modernos, S.A. de C.V. Todavía no se sobreponía completamente a su pena de amor, pero ahora veía todo aquello desde otra perspectiva. Se preguntaba cómo había podido enamorarse tanto de Rodrigo. Era cierto, Rodrigo **ángel**, era guapo y simpático, pero no era una persona de fiar. Nunca cumplía lo que decía, siempre **a su palabra**. Además, le

el cerebro a cualquiera con tal de conseguir sus objetivos. *¡Pero qué ciega estaba! Qué tonta, no puedo creer que yo casi* **el suelo** que Rodrigo pisaba. *Tanto tiempo perdido... ¿Por qué no lo mandé a* **espárragos** desde un principio...? pensó sintiendo un inesperado calor subiéndole de los pies a la cabeza, pero inmediatamente recuperó la compostura. Quería llegar a la fiesta serena y sonriente, y ya no se iba a **en un vaso de agua** por culpa de aquel tipo que no la merecía. ¡Nunca más le iba a **la fiesta!**

El taxista interrumpió sus pensamientos. “Ya llegamos, señorita.” “¡Ah! ¿Cuánto le debo?” “Son \$60 pesos.” “Aquí tiene, señor. Muchas gracias.” “Para servirle señorita, buenas noches.”

Vanessa se bajó del taxi y se dirigió ligera en sus altas zapatillas italianas rojo sangre hacia la casona de piedra rosada que tenía frente a ella. Tocó el timbre en la pared junto al portón de madera tallada. Podía escuchar la música, las voces y las risas que provenían de la casa. Luis Alberto, el dueño de la casa, le abrió la puerta. Le sonreía ampliamente, y para no perder la costumbre, le comenzó a **flores**. “Bienvenida mi querida Vanessa, tu elegante belleza me alegra la vista. El rojo es definitivamente tu color... ¡¡Te ves espectacular!!!” “Gracias Beto, tú tan caballeroso como siempre.” Sonrió Vanessa sacudiendo su melena castaña y sabiendo lo mucho que ella le gustaba. “¡Qué linda tu casa!” Lo decía en serio. Era una antigua casa de estilo colonial, que a pesar de los años se mantenía hermosa e imponente. Luis Alberto pertenecía a una adinerada familia de Querétaro que había pagado por sus estudios de Ingeniería en el MIT de Massachussets. Ahora, apenas en sus treintas, él era el Director Ejecutivo de la sucursal Querétaro de la compañía.

“Pasa, pasa, por favor, llegas a tiempo pues estamos a punto de comenzar la peregrinación.” La tomó de la mano mientras la conducía por el inmenso jardín donde, aún sin haber conocido el interior de la casa, saltaba a la vista la riqueza de los propietarios. Una mano cálida... “Aquí están las velitas. ¿Dónde quieres cantar, adentro o afuera?” *Siempre tan amable y considerado* pensó Vanessa al tiempo que prendía su velita blanca y afinaba la garganta para pedir posada. Luis Alberto le gustaba, no lo podía negar, pero desde su ruptura con Rodrigo había decidido ser más precavida y no **el tiempo** con amoríos superficiales. En todo caso, ella no iba a **el primer paso**.

“Een el nombre del cieeeelo, ooos pido posaaada...” comenzó a cantar con el grupo que se concentraba en el enorme jardín frente a la puerta de cristal que daba

acceso a la casa donde otro grupo cantaba “Aquí no es mesooooón, siigan aadelaaante...” Vanesa empezaba a relajarse cuando le pareció reconocer a alguien a través del cristal de la puerta. “¿Quién es ese hombre de saco azul?” Le preguntó a Luis Alberto, quien había permanecido a su lado. Él respondió: “No trabaja en la empresa, se **en la fiesta**, ya ves cómo algunas personas lo hacen para poder **el codo** gratis, jajaja. Bueno, en realidad es hijo de unos amigos de mis padres. Es abogado y está aquí porque no le ha ido muy bien en la ciudad de México y quiere que yo lo ayude a conseguir trabajo en la empresa. Pensé que tal vez en tu área haya algo para él. Se llama Rodrigo.”

Vanesa tuvo que morderse la lengua para no gritar su indignación, su rabia, su despecho... pero, para su sorpresa, estos sentimientos sólo duraron unos cuantos segundos y como por arte de magia la invadió una gran calma que le permitió responder imperturbable “No Beto, no hay nada para él. Lo conozco bien y por nada del mundo lo recomendaría en ningún lugar. Hoy no me preguntes por qué, pero algún día te voy a **el cuento**.” Vanesa se acercó un poco más a Luis Alberto, lo tomó de la mano y lo miró coquetamente a los ojos, *Mmmh, son verdes...* “¿Me invitas algo de tomar?” Luis Alberto apretó su mano, le devolvió la sonrisa y la atrajo un poco más hacia él. “Entendido. Confío ampliamente en tu capacidad y criterio. No hay trabajo en esta empresa para el hombre del saco azul”, y la encaminó suavemente hacia el bar.

Vanesa bailó, conversó, rió, bebió y rompió la piñata celebrando el inicio de esta nueva etapa en su vida. No le **la palabra** a Rodrigo en toda la noche. ¿Qué pasaría con Luis Alberto? No lo sabía, ¡pero lo iba disfrutar mucho! Ahora era más madura, tenía más confianza en sí misma y sabía lo que quería. ¿Qué pasaría con Rodrigo? No le importaba. Esta noche, después de mucho tiempo, sentía como si le hubieran quitado un gran peso de encima. *¡Nunca hubiera pensado que la venganza es tan dulce!* Se dijo mientras chupaba la caña de azúcar del ponche con ron que su futuro nuevo amor de ojos verdes le acababa de traer.

Appendix B
FRENCH SURVEY

Je vous remercie beaucoup de votre participation à cette recherche menée par Victoria Escaip, étudiante en doctorat à l'Ecole de Psychologie de l'Université de Canterbury à Christchurch, en Nouvelle Zélande.

Votre participation est anonyme et volontaire ; vous n'avez donc pas à écrire votre nom. Une fois que vous avez rempli et retourné le questionnaire, nous ne pourrons pas le supprimer de la base de données parce que, étant anonyme, nous ne pourrons pas savoir qui est à l'origine.

Ce n'est pas un test, de sorte qu'il n'y a pas de bonnes ou mauvaises réponses. Les résultats de cette enquête seront utilisés uniquement à des fins de recherche ; aussi, nous vous demandons de répondre honnêtement. Les informations que vous fournirez seront essentielles à la réussite de ce projet. La réalisation de cette recherche prendra environ deux ans. Si vous souhaitez obtenir une copie des résultats, envoyez un courriel à : victoria.escaip@canterbury.ac.nz. Vous pouvez conserver cette fiche d'information à cet effet.

Merci beaucoup encore une fois pour votre participation, et n'hésitez pas à me contacter si vous avez des questions.

**Ce projet de recherche a été examiné et approuvé par le Comité d'Ethique Humaine de l'Université de Canterbury.*

N'ECRIVEZ PAS VOTRE NOM, S'IL VOUS PLAÎT

Âge: Homme () Femme ()

Quelle est votre langue maternelle?

Français () Autre () Laquelle?

Si votre langue maternelle n'est pas le français, répondez aux questions suivantes, s'il vous plaît:

1. Depuis combien de temps parlez-vous français?

ans mois

2. Comment avez-vous appris à parler français ?

Par vous-même () Dans une école () Autre ()

Précisez, s'il vous plaît:

3. Dans quel pays?

Veillez lire l'histoire suivante et écrivez les mots manquants, selon vous, dans les espaces prévus. Par exemple:

Il faisait chaud, il y avait des moustiques, et je digérais mal. Résultat, J'ai passé une nuit blanche, et je me suis levé quand même à six heures.

Ne vous préoccupez pas de savoir si vos réponses sont correctes ou incorrectes. Il suffit d'écrire le premier mot qui vous vient à l'esprit!

Rosalie à la plage

Ce matin-là, elle décida qu'elle n'irait pas au lycée. Elle **donc l'école buissonnière**. Cette expression lui plaisait beaucoup. Elle s'imaginait allant se cacher derrière des buissons pour fuir cet univers qu'elle comparait souvent à une prison. Elle exagérerait bien sûr. Mais elle était triste, et elle **le cafard** rien que d'y penser.

Il faut dire quand même que son lycée n'était pas très attrayant: c'était un grand bâtiment entouré de murs, situé en pleine ville de Cannes. A part quelques tilleuls qui donnaient un peu d'ombre, tout n'était que béton surchauffé par le soleil de juin.

Rosalie avait donc décidé de fuir cet endroit: elle allait **la clé des champs**. Au lieu de se lever à sept heures comme d'habitude, elle laissa le temps passer et dormit tranquillement, tellement bien qu'elle avait fait le tour du cadran sans s'en apercevoir. Vers midi, l'esprit léger, elle voulut aller au bord de la mer pour se remplir les yeux de larges horizons.

Que dirait son père lorsque le lycée l'avertirait qu'elle était absente des cours? Il fallait qu'elle lui écrive. Il comprendrait et il **l'éponge là-dessus**. Elle prit du papier à lettre, une serviette, une bouteille d'eau, son maillot de bain, mit le tout dans un sac et sortit de sa chambre en faisant le moins de bruit possible, car sa logeuse, Mme Boyer, était très stricte. De plus, elle était si méfiante que Rosalie ne pouvait pas se permettre de lui **des salades**, car elle flairait aussitôt le mensonge. Elle ne la vit pas. Elle aurait le temps plus tard de lui dire la vérité.

Après s'être acheté un sandwich au jambon dans une boulangerie du boulevard Carnot, elle prit un bus qui la déposa à l'extérieur de la ville, au Cap d'Antibes. Elle se laissa guider par le sentier qui serpentait le long de la mer, parmi les rochers et les pins. Elle savourait cet instant: pendant que ses copains et copines s'ennuyaient en classe et **leur frein** en attendant l'heure de la sortie, elle se laissait envahir par cette bonne chaleur et ces odeurs de résine.

Elle choisit de s'arrêter sur un gros rocher plat sur lequel elle s'installa: elle enfila son maillot de bain et s'allongea sur sa serviette, le regard perdu dans les quelques nuages qui défilaient au-dessus d'elle. Son père lui manquait. Il était loin, au-delà des mers, quelque part en Asie. Il avait bien une adresse à Singapour, mais il **sa bosse**, voyageait souvent pour son travail. C'est pour ça qu'il avait préféré confier sa fille à des amis qui veillaient à son confort matériel: ce sont eux qui **les cordons de la bourse** et à qui Rosalie demandait de l'argent quand elle en avait

besoin. Quant à sa mère, elle ne se manifestait que rarement. D'ailleurs Rosalie ne savait pas vraiment où elle vivait et ça ne la gênait vraiment pas.

Soudain, alors qu'elle était adossée à un rocher pour écrire sa lettre à son père, un garçon s'approcha d'elle et lui dit bonjour. Elle n'avait pas envie de compagnie. Elle ne lui répondit pas. Elle pensa qu'il voulait seulement discuter, **une bavette**, mais il s'assit à quelques mètres et l'observa sans rien dire. Rosalie, que la présence de ce garçon gênait lui demanda ce qu'il voulait. Il répondit:

- Rien, je veux juste te regarder, car tu es très jolie!
- Ah, bon! Tu veux me plaire et alors tu essayes de me **la pilule**! Lui lança Rosalie, qui se savait très attirante avec son corps mince, sa peau bronzée et ses longs cheveux blonds.

Il haussa les épaules, détourna les yeux et dit:

- C'est bien normal que je te regarde puisque je te trouve jolie !

Rosalie peu à peu perdit son agressivité. Après tout, ce garçon paraissait gentil. En plus, il était plutôt mignon avec ses cheveux bruns bouclés, ses yeux rieurs et son petit nez un peu retroussé. Elle accepta de lui dire son prénom et lui demanda le sien: « Jérôme ». Tout en continuant à écrire à son père, elle lui demanda pourquoi il n'était pas en classe, vu qu'il avait à peu près le même âge qu'elle. Là, ils avaient au moins un point commun: lui aussi sautait les cours.

- Et qu'en pensent tes parents? Lui demanda Rosalie.

Il eut un geste vague qui signifiait sans doute que ce n'était pas vraiment un problème:

- Mon père est mort il y a longtemps, il a **sa pipe** dans un accident de voiture.
- Et ta mère?
- Ma mère? Bof! Ce n'est pas elle qui va se faire du souci pour moi: elle n'est pas du genre à me **noise**. En plus, je ne la vois pas souvent. Ce qui est sûr, c'est qu'elle ne va pas s'énerver pour si peu; elle ne **pas les plombs** pour si peu.
- Alors, comment tu vis ? S'étonna Rosalie

Jérôme devint soudain plus tendu. Son visage se ferma. Il lui expliqua rapidement qu'il devait travailler pour vivre, que c'était pour ça qu'il n'allait pas toujours au lycée.

Tout en parlant, il examina les vêtements de Rosalie, son sac, ses chaussures, et plus particulièrement sa montre. Il lui dit:

- Tout ça doit **les yeux de la tête!**

Un peu gênée, Rosalie lui répondit qu'elle avait de la chance d'avoir un père assez riche, mais que ça ne compensait pas sa solitude. Elle lui raconta à son tour son père, sa mère, le lycée...

Pendant qu'ils discutaient ainsi, le ciel s'assombrit: un orage s'annonçait. Déjà, on entendait des grondements et quelques gouttes de pluie se mirent à tomber. Vite, il fallait se dépêcher de se mettre à l'abri! Rosalie se rhabilla en vitesse, Jérôme l'aida à ramasser ses affaires et tous deux prirent leurs jambes à leur cou. Apercevant un renfoncement au bas de la falaise, comme une sorte de grotte, ils s'y précipitèrent. L'orage éclata. De grosses gouttes tombaient du ciel, de plus en plus denses. Il

des cordes !

Leur abri n'était pas bien confortable, mais serrés l'un contre l'autre, ce n'était pas si mal! C'est ce qu'ils pensaient tous les deux. Rosalie eut faim. Elle sortit son sandwich et dit à Jérôme :

- Tu veux casser la croûte?

Il accepta, le visage illuminé par un grand sourire un peu naïf. Décidément, ce garçon lui plaisait de plus en plus. Elle partagea alors son sandwich et sortit aussi le reste d'un paquet de biscuits, ainsi que sa bouteille d'eau. Elle était contente de partager quelque chose avec quelqu'un avec qui elle se sentait bien.

Quand l'orage fut passé, ils repartirent vers la ville. Ils se promenèrent lentement sur le boulevard qui longeait le bord de mer, éclatant de rire à la moindre occasion, comme deux adolescents amoureux qui **la boule**. Ils s'arrêtèrent un moment devant la terrasse d'un café où une dispute entre deux clients venait d'éclater. Visiblement, ils étaient ivres. L'un d'eux se leva en reprochant bruyamment à l'autre de vouloir consommer sans payer :

- Alors comme ça, tu veux te **la dalle** et me laisser payer? Tu ne veux pas qu'en plus, je te serve et que je te **les pompes ?**

L'autre tenta de se lever, mais il retomba sur sa chaise. Sur ce, le patron intervint et les invita avec beaucoup d'énergie à **leurs salades** ailleurs afin de laisser les clients tranquilles.

Rosalie et Jérôme s'éloignèrent, un peu mal à l'aise par cette scène. Elle trouvait

dégradant que quelqu'un s'enivre de cette façon. Il lui avoua qu'il connaissait un peu le problème à cause de sa mère... Il n'ajouta rien. C'était inutile. Elle avait compris.

Elle songea à sa lettre. Elle pensa la terminer rapidement pour la mettre à la boîte aux lettres, afin que son père la reçoive le plus tôt possible. Mais elle n'aimait pas écrire dans le but de remplir des pages, elle n'aimait pas **du papier**. Elle voulait prendre son temps pour choisir ses mots. De plus, elle ne voulait pas non plus quitter Jérôme et briser ainsi le charme de leur rencontre.

La fin de journée fut heureuse pour tous les deux. Ils promirent de se revoir.

Nous pouvons, sans nous tromper, assurer que ce fut le cas, et bien souvent.

Appendix C
ENGLISH SURVEY

Thank you very much for participating in this research conducted by Victoria Escaip, a PhD student at the School of Psychology of the University of Canterbury in Christchurch, New Zealand. Your participation is anonymous, so you don't need to write down your name. Also, your participation is strictly voluntary. Once you have completed and returned the questionnaire we won't be able to remove it from the database because, being anonymous, we won't know which one is YOUR questionnaire.

This is not a test so there is no right or wrong answers. The results of this survey will be used only for research purposes, thus we ask you to answer honestly. The information you provide will be vital to the success of this project.

The completion of this research will take approximately two years. If you would like to get a copy of the results, please send an email to victoria.escaip@canterbury.ac.nz. You can keep this information sheet for this purpose.

Thank you very much again for your participation and please feel free to contact me if you have any questions.

**This research project has been reviewed and approved by the University of Canterbury Human Ethics Committee.*

PLEASE DO NOT WRITE YOUR NAME

Age: _____ **Male () Female ()**

What is your native language?

English () Other () Which one?

If your native language is NOT English, please answer the following questions:

1. How long have you been speaking English?

_____ **years** **months**

2. How did you learn to speak English?

By myself () In a school () Other ()

Please specify:

3. In what country?

Please read the following story and when you find a gap write in the word you think should go there. For example:

Wow! It's really raining cats and dogs out there!!!

Don't worry if you can't think of a word straight away, just put in your best guess.

The Christmas Function

Shannon walked into the vast, badly-decorated function room and looked around for faces she knew. Tom's hand waved frantically at her from a table near the coat check. *Thank goodness!* She thought to herself, *I'm not the only one from Data Entry here!* Shannon normally **these kind of events like the plague**, but her pushy new flatmate had convinced her a night out might be in order, especially considering she'd only been at the firm for a few weeks. She walked towards Tom and was further relieved to see familiar faces from Accounts, which had its offices on the same floor as her department. On closer inspection, she realised she knew a few others at the table – Jenny, who had a tendency to **the goat** at inter-departmental health and safety meetings, pulling faces and telling stupid jokes; Annabel, who always looks like a startled deer when you ask her anything that isn't work-related, her face going blotchy at the prospect of real conversation; and Jonno, who **every woman on the floor the creeps** with his fake smile and lame innuendo. It was clear that he'd already found his target for the evening, singling out a youngish redhead opposite Jenny. *This could be more tedious than I expected* Shannon grumbled as she got to the table and took the empty seat next to Jonno. She said a quiet hello and waited for Tom to do the proper introductions.

"Shannon, you remember Jenny, Annabel and Jonno, don't you? That's Annabel's friend Kim over there, and this is Peter from Marketing, Peter, this is Shannon from Data Entry" Tom duly offered.

"Hello Shannon" Peter smiled warmly and shook her hand. *Not bad*, she thought, *the night might not be a waste of makeup after all*. She looked up just in time to hear Tom finish the next introduction.

"...ndy, from, erm, sorry, which division is it you're in again?"

"Stores", he said tersely, "and it's Andrew".

"Ah, right, sorry about that, Andrew. And, ah, this is Shannon, from Data Entry" Tom rushed. Shannon nodded, smiled wanly and mumbled something polite. *Blimey! If that's his friendly party manner then he'll* **the lot of us to drink!** *Mind you, that's likely to happen, it being the Christmas do and all*. Shannon directed her attention back to Peter. He was looking at her too and trying to be heard over the deep and meaningful conversation Jonno was having with the redhead. Shannon tried to make his words out. *Pray? Or something about a braid? A ray?*

“Shall we **the fray?**” he half-shouted.

“Sorry?!!”

“Dance? You want to dance?” He pointed at the large group of people wriggling to the strains of the Macarena.

“Sure” she yelled back, happy to get the chance to chat.

On the dance floor, Peter started talking about their colleagues moving around them, pointing out various departmental managers and PAs.

“She’s really into one of those party-plan companies,” he started, nodding towards a brunette spinning around to Kylie Minogue, “so try not to get into a long chat with her or you’ll end up with endless cooking products! She’s fanatical about **the company line**, though. And he’s the assistant manager out at the warehouse, always trying to **the others into action**. You know, the old ‘Go team’ speech.” Peter sighed quietly. “Shame though, seeing as the ‘team’ don’t exactly **the ground he walks on**.”

“Yeah, office politics must be the same the world over! Shannon cringed inwardly as she heard the dross coming out of her mouth. *Typical, as soon as anyone decent starts talking to me I lose about 30 IQ points!*

“So how long have you been working here?” she ventured, hoping to make up for her dullness.

“Oh, ah... in the company a few years, but here in Manchester only the last eight months. And you?”

“Only a few weeks. I needed a change from call centre work”. Peter grinned knowingly at that.

“Was that here in Manchester?”

“No, I’d been living in Australia for a while. I moved back and started here the next week.”

“You don’t **things by halves**, do you!?, Peter laughed, “Change jobs and change countries, for a break!”

“I’ll **you into a secret**” she smirked. “I wasn’t exactly mad on staying in Australia. I just waited ‘til after I’d had more than enough of my job to make the decision.”

“Not your cup of tea, then? All that sun and sea and sand?” Peter looked a little puzzled. Shannon could tell he thought all of Australia must be a paradise on earth.

“There was sand, all right. Sand and more sand and sand and snakes and spiders and more sand again! I was in the ‘back of beyond’, as the Aussies would say. I guess I’m not really a country girl. So I handed in my notice and **tracks** for the safety of inner city England.”

“Whatever makes you happy, I guess, though I don’t get how you could leave those temperatures! Still, I don’t think I’d have ever **up the courage** to move over there in the first place. Manchester’s about the most exotic place I’ve ever lived.”

“Yeah, I think the snake in my bed after a bad day at work **my fate**. I booked my flight home the next day!”

“Yes, well, can’t say I blame you for that!”

The music changed to something slower and they instantly moved apart, the uncomfortable moment echoed by other dance partners around the room.

“Shall we go back to the table for a bit?” Shannon nodded readily, following him back to the table. She knew she was beginning to **a fancy to the guy**, and a little group conversation might help her from going overboard.

“Ah, there you are, Shannon! Looks like you two have been getting friendly. Nice dance, was it?” Her supervisor’s comment turned her face bright red, and when she looked up Tom was desperately trying to **a straight face** over the tactlessness of their boss. Peter, fortunately, seemed not to have heard.

“They’ve **no expense**, have they?” The supervisor picked up the ‘99p shop’ decorations in the centrepiece. “At least the food smells promising. Sorry, I’m Jake Lewis, 21C in Data Entry. And you’re?”

“Peter Mayell. Marketing manager.” *Manager?! No wonder he had all the gossip!* “My team planned the party.”

Tom caught Shannon’s eyes, both enjoying the brief moment of discomfort Jake went through before Peter admitted he was pulling his leg. Everybody at the table had a good laugh, but Shannon knew Jake really wanted to **Peter’s neck**.

“Seriously, though, aren’t they trying to **their belts**? You know, less spending on frivolous parties and more on real staff benefits.” Tom asked. Everyone groaned at the shoptalk and the group quickly found some meaningless politician’s embarrassment to steer the direction away from work. They’d barely started on the relentlessness of the tabloids when the PA system came on to announce the CEO’s presence and inevitable speech.

“Good evening everyone, and thank you for coming here tonight to celebrate another successful year at Smith Industries” he started. The dull hum around the room was proof of the lack of interest in the expected description of income, outgoings and profit margins. A quick scan of the rest of her table told Shannon most of the others were equally indifferent, though Peter was missing. She cast her eyes over the neighbouring tables but couldn’t spot him. Tom, meanwhile, was listening intently. Reluctantly, she focused her attention back on the speech.

“This year we’re doing something a bit different. You may have noticed the slightly less-than-fancy decorations on the table and the jukebox in place of a DJ or band. If you were thinking that the evening looked a little cheap, well, it is. I mean, the party you can see is cheap. This year, however, we thought we’d **last year’s Christmas party off the map!** If you’d like to stand up and follow Mr Mayell and Mr Thomsen out into the hallway, you may find yourselves pleasantly surprised.”

Amongst the murmurs of confusion, Shannon stood up to follow Peter out. *No wonder he’d joked about the party – he really had organised it!*

Everyone followed Peter’s lead, into the hallway and then out onto the bus lay by outside. There were a few moans about the company **the bottom of the barrel** with a bus trip before two airline coaches drew up and opened their doors.

Inside, Peter explained to the group that the company’s heads felt the profits this year deserved a real ‘thank you’ to the staff. Instead of the usual buffet, they were in fact taking a champagne service charter plane to Edinburgh, or more rightly a boutique hotel near Edinburgh, and would be meeting all the full-timers from other two company offices there for the company’s first-ever ‘proper’ Christmas party. Shocked silence turned into cheers and Peter headed over to sit near Shannon.

“Jesse Thomsen’s doing the same in the other coach,” he explained, “and I couldn’t tell anyone what we were doing, so sorry about telling your supervisor we were pulling his leg! We were, just in the ‘this isn’t really a party’ kind of way.” He laughed again and his eyes sparkled. “It’s going to be a big night!”

She nodded in agreement. All Shannon could think about was how she was going to thank her flatmate for making her come out tonight. Peter leaned towards her and quietly murmured something about a dinner date the next weekend. The coach drew nearer the airport and the excited noises got louder. *Definitely not a waste of make up!* She smiled to herself. *I think I might get to quite like this job!*

APPENDIX D

HEAD-VERBS FREQUENCY RANKS

SPANISH

Mark Davies Verbs Rank Frequency List		Chang-Rodriguez	Rank	Graded Spanish Word Book	
Verb	Rank	Verb	Frequency	Verb	Merit
Tener	18	Tener	24	Tener	200.00
Dar	39	Dar	42	Dar	200.00
Volver	112	Volver	119	Volver	150.00
Contar	155	Contar	198	Contar	78.70
Perder	190	Perder	201	Perder	150.00
Faltar	510	Faltar	264	Faltar	71.40
Echar	455	Echar	392	Echar	94.90
Sentar	710	Sentar	444	Sentar	67.20
Dirigir	331	Dirigir	527	Dirigir	60.70
Entregar	558	Entregar	896	Entregar	55.70
Quemar	1,509	Quemar	1,589	Quemar	26.80
Besar	3,696	Besar	1,648	Besar	47.60
Lavar	1,762	Lavar	2,251	Lavar	26.90
Ahogar	2,821	Ahogar	2,648	Ahogar	33.80
Consultar	1,587	Consultar	3,132	Consultar	19.70
Aguar	*10,000	Aguar	*10,000	Aguar	*0.00
Ahuecar	*10,000	Ahuecar	*10,000	Ahuecar	5.60
Empinar	*10,000	Empinar	*10,000	Empinar	7.00
Colar	4,237	Colar	*10,000	Colar	12.60
Freír	*10,000	Freír	*10,000	Freír	17.40

*Not appearing in any list

APPENDIX E
FREQUENCY CRITERION
SPANISH

	Head-Verbs	Category	Frequency Criterion
HL	Tener	High Frequency Light Verbs	Appearing in the top 1-200 words
HL	Dar		
HL	Volver		
HL	Contar		
HL	Perder		
H	Faltar	High Frequency Lexical Verbs	Appearing in the 201-1000 words
H	Echar		
H	Sentar		
H	Dirigir		
H	Entregar		
M	Quemar	Medium Frequency Lexical Verbs	Appearing in the 1001-4000 words
M	Besar		
M	Lavar		
M	Ahogar		
M	Consultar		
L	Aguar	Low Frequency Lexical Verbs	Appearing after 4001 words, or not appearing in any list
L	Ahuecar		
L	Empinar		
L	Colar		
L	Freír		

APPENDIX F

LIST OF SELECTED FORMULAIC EXPRESSIONS

SPANISH

Frequency Category	Formulaic Expression
HL	Tener ángel
HL	Dar el primer paso
HL	Volver la vista atrás
HL	Contar el cuento
HL	Perder el tiempo
H	Faltar a su palabra
H	Echar flores
H	Sentar cabeza
H	Dirigir la palabra
H	Entregarse en cuerpo y alma
M	Quemarse las pestañas
M	Besar el suelo que (n) pisa
M	Lavar el cerebro
M	Ahogarse en un vaso de agua
M	Consultar con la almohada
L	Aguar la fiesta
L	Ahuecar el ala
L	Empinar el codo
L	Colarse en la fiesta
L	Freír espárragos

HL – High-light

H – High

M – Medium

L – Light

APPENDIX G
HEAD-VERBS FREQUENCY RANKS
FRENCH

Verb	Rank
Avoir	11
Faire	18
Prendre	79
Passer	95
Chercher	171
Perdre	206
Tenir	219
Raconter	358
Casser	520
Coûter	860
Pleuvoir	1040
Rouler	1116
Péter	1841
Tailler	3348
Ronger	3614
Cirer	5198
Rincer	6349
Déballer	7130
Dorer	8385
Barbouiller	11909

APPENDIX H
FREQUENCY CRITERION
FRENCH

	Head-Verbs	Category	Frequency Criterion
HL	Avoir	High Frequency Light Verbs	Appearing in the top 1-200 words.
HL	Faire		
HL	Prendre		
HL	Passer		
HL	Chercher		
H	Perdre	High Frequency Lexical Verbs	Appearing in the 201-1,000 words.
H	Tenir		
H	Raconter		
H	Casser		
H	Coûter		
M	Pleuvoir	Medium Frequency Lexical Verbs	Appearing in the 1,001-4,000 words.
M	Rouler		
M	Péter		
M	Tailler		
M	Ronger		
L	Cirer	Low Frequency Lexical Verbs	Appearing after 5,000 words.
L	Rincer		
L	Déballer		
L	Dorer		
L	Barbouiller		

APPENDIX I

LIST OF SELECTED FORMULAIC EXPRESSIONS

FRENCH

Frequency Category	Formulaic Expression
HL	Avoir le cafard
HL	Faire l'école buissonnière
HL	Prendre la clé des champs
HL	Passer l'éponge là-dessus
HL	Chercher noise à quelqu'un
H	Perdre la boule
H	Tenir les cordons de la bourse
H	Raconter des salades
H	Casser sa pipe
H	Coûter les yeux de la tête
M	Pleuvoir des cordes
M	Rouler sa bosse
M	Péter les plombs
M	Tailler une bavette
M	Ronger son frein
L	Cirer les pompes
L	Se rincer la dalle
L	Déballer ses salades
L	Dorer la pilule
L	Barbouiller du papier

HL – High-light

H – High

M – Medium

L – Light

APPENDIX J
HEAD-VERBS FREQUENCY RANKS
ENGLISH

Verb	Rank
Do	18
Make	46
Take	54
Give	76
Keep	189
Let	330
Join	594
Drive	618
Act	654
Avoid	866
Wipe	3122
Tighten	4178
Seal	4249
Spare	5457
Scrape	6011
Worship	no rank
Wring	no rank
Pluck	no rank
Goad	no rank
Toe	no rank

APPENDIX K
FREQUENCY CRITERION
ENGLISH

	Head-Verbs	Category	Frequency Criterion
HL	Do	High Frequency Light Verbs	Appearing in the top 1-200 words.
HL	Make		
HL	Take		
HL	Give		
HL	Keep		
H	Let	High Frequency Lexical Verbs	Appearing in the 201-1,000 words.
H	Join		
H	Drive		
H	Act		
H	Avoid		
M	Wipe	Medium Frequency Lexical Verbs	Appearing in the 3,000-6,100 words.
M	Tighten		
M	Seal		
M	Spare		
M	Scrape		
L	Worship	Low Frequency Lexical Verbs	Not appearing in any list.
L	Wring		
L	Pluck		
L	Goad		
L	Toe		

APPENDIX L

LIST OF SELECTED FORMULAIC EXPRESSIONS

ENGLISH

Frequency Category	Formulaic Expression
HL	Do things by halves
HL	Make tracks (for)
HL	Take a fancy to NP
HL	Give NP the creeps
HL	Keep a straight face
H	Let NP into a secret
H	Join the fray
H	Drive NP to drink
H	Act the goat
H	Avoid NP like the plague
M	Wipe NP off the map
M	Tighten NP's belt
M	Seal NP's fate
M	Spare no expense
M	Scrape the bottom of the barrel
L	Worship the ground NP walks on
L	Wring NP's neck
L	Pluck up courage
L	Goad NP into action
L	Toe the company line

HL – High-light

H – High

M – Medium

L – Light

APPENDIX M

Online communication to participants (e-mail) SPANISH

Estimado participante,

Muchas gracias por ayudarme en mi investigación de doctorado respondiendo esta encuesta que te envió en un archivo anexo. Responder la encuesta te tomará alrededor de 20 minutos. Es una encuesta amena de contestar ya que se trata de un cuento corto en el que sólo tienes que escribir las palabras que faltan en los espacios indicados. Es importante que no consultes con nadie las respuestas pues de esto depende el resultado de mi investigación. Como la encuesta es anónima, será catalogada y archivada sin tus datos personales, así es que no te preocupes pensando si las respuestas están bien o mal... ¡sólo escribe lo primero que te venga a la mente!

A continuación te mando las instrucciones para contestar la encuesta:

1. Extrae el archivo a una carpeta de tu computadora.
2. Ejecuta el archivo desde esa carpeta y contesta el cuestionario. Asegúrate de responder la encuesta completa que consta de 5 páginas incluyendo la carátula. Recuerda NO consultar con nadie las respuestas, sólo escribe lo primero que te venga a la mente.
3. Una vez que hayas terminado, salva el archivo.
4. Mándame el archivo de regreso a este email, victoriaescaip@hotmail.com, extrayéndolo de la carpeta en la que lo guardaste originalmente.

Esta encuesta es anónima y una vez que me la envíes será imprimida y archivada con todas las demás sin tu nombre.

¡De antemano, te agradezco muchísimo tu ayuda!

Saludos cordiales,

Victoria

APPENDIX N

Online communication to participants (e-mail) FRENCH

Cher participant,

Je vous remercie beaucoup de m'aider dans ma recherche doctorale en répondant à l'enquête jointe à cet e-mail. Cela vous prendra environ 20 minutes. Je suis sûre que vous trouverez cette enquête facile, car il s'agit d'une histoire courte et amusante dans laquelle vous devez écrire les mots manquants dans les espaces prévus. Il est très important de ne pas demander d'aide, ni de chercher dans un dictionnaire. Vos réponses doivent être spontanées et rapides. Le résultat de ma recherche dépend de votre spontanéité. Comme l'enquête est anonyme, elle sera cataloguée et archivée sans vos données personnelles. Alors, ne vous préoccupez pas de savoir si vos réponses sont correctes ou incorrectes. Il suffit d'écrire le premier mot qui vous vient à l'esprit !

Les instructions pour répondre à l'enquête sont les suivantes:

- 1 Enregistrer le fichier dans un dossier de votre ordinateur.
- 2 Répondre à l'enquête en vous assurant qu'elle est complète (elle se compose de 5 pages, y compris la page de garde)
- 3 Une fois que vous avez terminé, enregistrez ce fichier.
- 4 Envoyez-le moi en pièce jointe à cette adresse : victoriaescaip@hotmail.com

Une fois que je l'aurai reçue, cette enquête sera imprimée et déposée avec les autres, sans votre nom ni votre adresse e-mail.

Cordialement,
Victoria Escaip

APPENDIX O

Online communication to participants (e-mail) ENGLISH

Dear participant,

Thank you very much for helping me in my doctoral research answering the attached survey. It will take you about 20 minutes to answer it. I'm sure you'll find this survey easy to answer since it is an entertaining short story in which you only have to write the missing words in the spaces provided. It is important that you do not seek help or ask anyone else when figuring out the missing words because the outcome of my research depends on these responses. As the survey is anonymous, it will be catalogued and archived without your personal details, so do not worry wondering if the answers are right or wrong... just write the first thing that comes to your mind!

The instructions to complete the survey are the following:

1. Extract the attached file to a folder on your computer.
2. Run the file from that folder and answer the survey. Be sure to answer the entire survey which consists of 6 pages including the cover.
3. Once you're done, save the file.
4. Send me the file back to this email, victoriaescaip@hotmail.com, removing it from the folder where you saved it originally.

This survey is anonymous and once I have it back it will be printed and filed with the other ones without your name.

Thank you very much for your help again!

Warm regards,

Victoria

APPENDIX P
SPANISH CORPORA FREQUENCY DATA
esTenTen (2,459,314,898 tokens - 2,103,770,763 words)

Frequency Category	Formulaic Expression	Expression Frequency	Head-Verb	Head-Verb Frequency	Noun	Noun Frequency
HL	Tener ángel	58 (0.0)*	Tener	9198902 (3740.4)*	ángel	22376 (9.1)*
HL	Dar el primer paso	2686 (1.1)*	Dar	3236663 (1361.1)*	paso	578930 (235.4)*
HL	Volver la vista atrás	600 (0.2)*	Volver	826824 (336.2)*	vista	440623 (179.2)*
HL	Contar el cuento	457 (0.2)*	Contar	905702 (368.3)*	cuento	109753 (44.6)*
HL	Perder el tiempo	12569 (5.1)*	Perder	641094 (260.7)*	tiempo	1831702 (744.8)*
H	Faltar a su palabra	172 (0.1)*	Faltar	242143 (98.5)*	palabra	520029 (211.5)*
H	Echar flores	292 (0.1)*	Echar	253960 (103.3)*	flor	97691 (39.7)*
H	Sentar cabeza	329 (0.1)*	Sentar	5288 (26.5)*	cabeza	290107 (118.0)*
H	Dirigir la palabra	664 (0.3)*	Dirigir	511806 (208.1)*	palabra	520029 (211.5)*
H	Entregarse en cuerpo y alma	379 (0.1)*	Entregar	197214 (80.2)*	cuerpo	412105 (167.6)*
M	Quemarse las pestañas	46 (0.0)*	Quemar	60680 (24.7)*	pestaña	21492 (8.7)*
M	Besar el suelo que (n) pisa	19 (0.0)*	Besar	12034 (4.9)*	suelo	245338 (99.8)*
M	Lavar el cerebro	624 (0.3)*	Lavar	60554 (24.6)*	cerebro	71095 (28.9)*
M	Ahogarse en un vaso de agua	36 (0.0)*	Ahogar	12156 (4.9)*	vaso	50059 (20.4)*
M	Consultar con la almohada	49 (0.0)*	Consultar	140466 (57.1)*	almohada	10612 (4.3)*
L	Aguar la fiesta	425 (0.2)*	Aguar	425 (0.2)*	fiesta	305457 (124.2)*
L	Ahuecar el ala	20 (0.0)*	Ahuecar	81 (0.0)*	ala	48677 (19.8)*
L	Empinar el codo	112 ((0.0)*	Empinar	1819 (0.7)*	codo	16311 (6.6)*
L	Colarse en la fiesta	174 (0.1)*	Colar	19044 (7.7)*	fiesta	305457 (124.2)*
L	Freír espárragos	158 (0.1)*	Freír	17789 (7.2)*	espárrago	6234 (2.5)*

*(Per million words)

APPENDIX Q
FRENCH CORPORA FREQUENCY DATA
frTenTen (12,369,868,562 tokens - 10,666,617,369 words)

Frequency Category	Formulaic Expression	Expression Frequency	Head-Verb	Head-Verb Frequency	Noun	Noun Frequency
HL	Avoir le cafard	1582 (0.1)*	Avoir	176628299 (14278.9)*	cafard	22677 (1.8)*
HL	Faire l'école buissonnière	1195 (0.1)*	Faire	52436067 (4239.0)*	école	2348897 (189.9)*
HL	Prendre la clé des champs	653 (0.1)*	Prendre	13171873 (1064.8)*	clé	863835 (69.8)*
HL	Passer l'éponge là-dessus	89 (0.0)*	Passer	9526288 (770.1)*	éponge	1641 (0.1)*
HL	Chercher noise à quelqu'un	3555 (0.3)*	Chercher	3028431 (244.8)*	noise	10671 (0.9)*
H	Perdre la boule	2757 (0.2)*	Perdre	3089063 (249.7)*	boule	313633 (25.4)*
H	Tenir les cordons de la bourse	507 (0.0)*	Tenir	4562516 (368.8)*	cordon	80645 (6.5)*
H	Raconter des salades	1341 (0.1)*	Raconter	1019846 (82.4)*	salade	140741 (11.4)*
H	Casser sa pipe	915 (0.1)*	Casser	481812 (39.0)*	pipe	125032 (10.1)*
H	Coûter les yeux de la tête	1004 (0.1)*	Coûter	500425 (40.5)*	Œil	3924453 (317.3)*
M	Pleuvoir des cordes	2119 (0.2)*	Pleuvoir	113840 (9.2)*	corde	285471 (23.1)*
M	Rouler sa bosse	2620 (0.2)*	Rouler	504154 (40.8)*	bosse	66618 (5.4)*
M	Péter les plombs	8212 (0.7)*	Péter	113142 (9.1)*	plomb	164019 (13.3)*
M	Tailler une bavette	1315 (0.1)*	Tailler	205802 (16.6)*	bavette	6852 (0.6)*
M	Ronger son frein	3914 (0.3)*	Ronger	74640 (6.0)*	frein	175047 (14.2)*
L	Cirer les pompes	1816 (0.1)*	Cirer	29661 (2.4)*	pompe	296192 (23.9)*
L	Se rincer la dalle	60 (0.0)*	Rincer	66763 (5.4)*	dalle	100873 (8.2)*
L	Déballer ses salades	22 (0.0)*	Déballer	34945 (2.8)*	salade	140741 (11.4)*
L	Dorer la pilule	1698 (0.1)*	Dorer	132738 (10.7)*	pilule	119400 (9.7)*
L	Barbouiller du papier	103 (0.0)*	Barbouiller	8460 (0.7)*	papier	1014190 (82.0)*

* (Per million words)

APPENDIX R
ENGLISH CORPORA FREQUENCY DATA
Sketch Engine BNC (112,181,015 tokens - 96,048,950 words)

Frequency Category	Formulaic Expression	Expression Frequency	Head-Verb	Head-Verb Frequency	Noun	Noun Frequency
HL	Do things by halves	3 (0.0)*	Do	529556 (4720.5)*	thing	74841 (667.1)*
HL	Make tracks (for)	17 (0.2)*	Make	210267 (1874.4)*	track	7491 (66.8)*
HL	Take a fancy to NP	43 (0.4)*	Take	173412 (1545.8)*	fancy	462 (4.1)*
HL	Give NP the creeps	30 (0.3)*	Give	123424 (1100.2)*	creep/creeps	222 (2.0)*
HL	Keep a straight face	32 (0.3)*	Keep	48581 (433.1)*	face	29325 (261.4)*
H	Let NP into a secret	10 (0.1)*	Let	26853 (239.4)*	secret	3410 (30.4)*
H	Join the fray	22 (0.2)*	Join	16978 (151.3)*	fray	161 (1.4)*
H	Drive NP to drink	12 (0.1)*	Drive	14796 (131.9)*	n/a	n/a
H	Act the goat	3 (0.0)*	Act	13507 (120.4)*	goat	1160 (10.3)*
H	Avoid NP like the plague	32 (0.3)*	Avoid	11835 (105.5)*	plague	548 (4.9)*
M	Wipe NP off the map	4 (0.0)*	Wipe	2275 (20.3)*	map	5515 (49.2)*
M	Tighten NP's belt	25 (0.2)*	Tighten	1424 (12.7)*	belt	2583 (23.0)*
M	Seal NP's fate	39 (0.3)*	Seal	1419 (12.6)*	fate	2245 (20.0)*
M	Spare no expense	25 (0.2)*	Spare	1535 (13.7)*	expense	4690 (41.8)*
M	Scrape the bottom of the barrel	5 (0.0)*	Scrape	810 (7.2)*	barrel	1401 (12.5)*
L	Worship the ground NP walks on	5 (0.0)*	Worship	619 (5.5)*	ground	15050 (134.2)*
L	Wring NP's neck	18 (0.2)*	Wring	243 (2.2)*	neck	5608 (50.0)*
L	Pluck up courage	81 (0.7)*	Pluck	614 (5.5)*	courage	1821 (16.2)*
L	Goad NP into action	7 (0.1)*	Goad	151 (1.3)*	action	26581 (236.9)*
L	Toe the company line	38 (0.3)*	Toe	43 (0.4)*	line	31616 (281.8)*

* (Per million words)